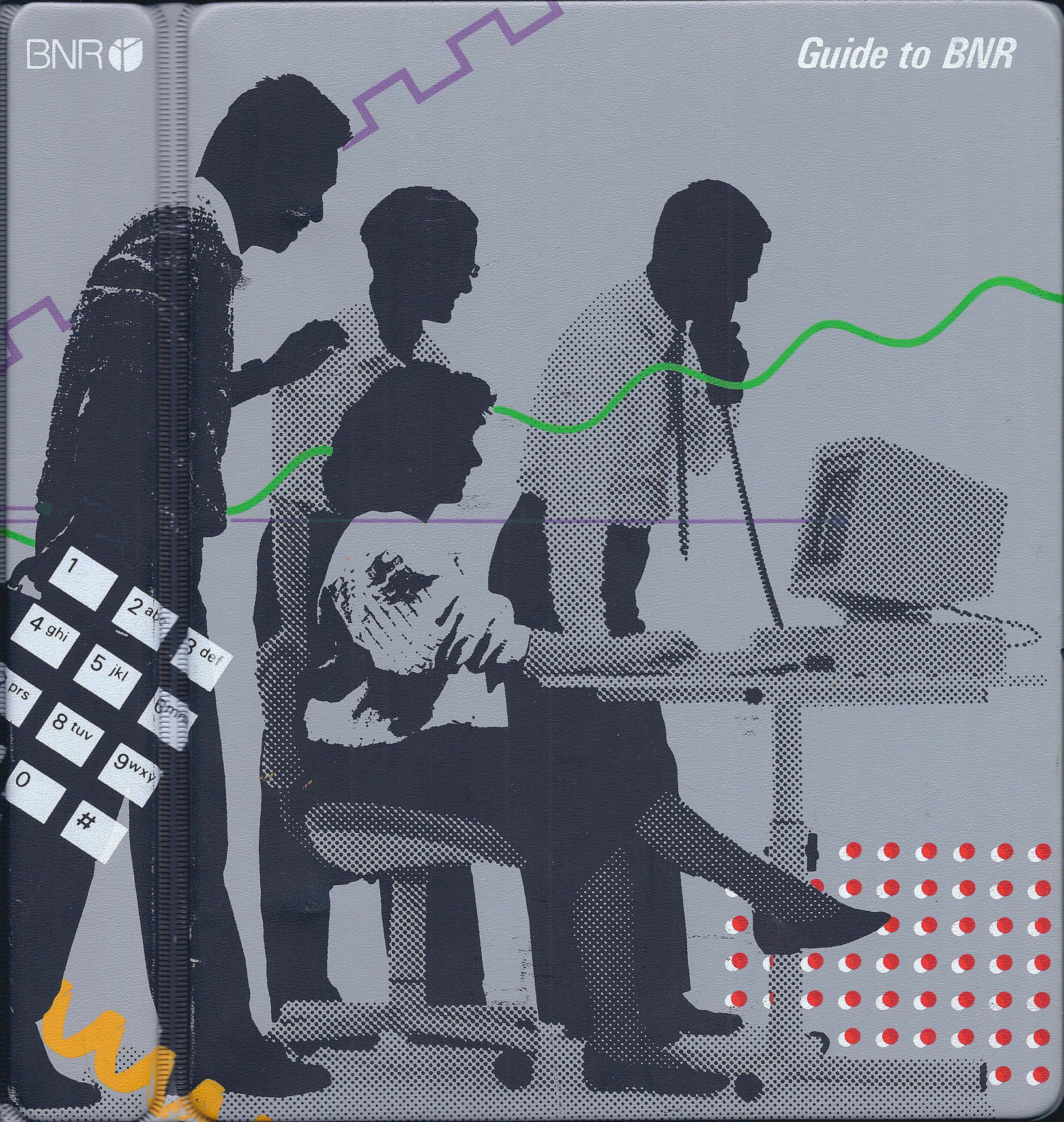
BNR

Guide to BNR



Introduction



Introduction

The information you'll find in this guide has been designed in a convenient and easy-to-read format to help you grasp the complex nature of BNR quickly. The guide is divided into six sections, each with a specific focus in mind:

1. *About BNR:* Explains how BNR is organized, its place in the larger tricorporate structure, and its approach to and method of doing business.

2. *Organization:* Provides an overview of the product designs we work on.

3. *Design Support:* Describes the Design Support groups that will help you do a quality job.

4. *You and BNR:* Gives you a feel for the importance we, at BNR, place on you, and an understanding of how you fit into the BNR community. You'll also learn about the other support groups that offer valuable assistance in getting the job done and keeping you current in your field.

5. *Our Labs:* Describes all the labs that constitute BNR and gives you some information on the research and development activities that take place in each.

6. *Frequent Business Activities:* Provides a job aid that tells you how to handle a number of important business activities.

You'll find a general table of contents at the front of this book, and a more detailed table of contents at the beginning of each section. Use the index at the back of the book to find specific subjects. The index will tell you what section the subject is in, and the page number in that section.

Our official business practices are available in a series of documents referred to as Corporate Policies and Procedures. These form the basis for most of the information contained in this handbook. Although certain practices or programs may vary slightly at the different labs, the overall policies and procedures are the same for all BNR labs.

This handbook is just an introduction to this official information, so it does not go into detail. If you want more information on a specific matter, consult your manager or get a copy of the relevant document from your local Information or Learning Resource Center. The Policies and Procedures documents are also available from your local stockroom.

Each BNR lab has its own Human Resources department and each division has its own Human Resources manager. Frequently throughout this book, you'll be referred to your HR department or your HR manager. You'll find these numbers listed in the BNR telephone directory. You're encouraged to contact both the HR department and your HR manager whenever you have an employment concern that you want to discuss.

Keep in mind that the material in this book was current at the time of printing. However, the details of various policies, procedures, and programs are subject to change.

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Frequent Business Activities

About BNR



About BNR

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BNR's Philosophy

Over the past decade, BNR has earned a world-wide reputation for excellence by designing and developing technologically advanced, high quality digital switching systems and office communications systems.

We operate on the principle that leadership, innovation, and excellence thrive only in an environment where open communications, sharing of ideas, risk taking, and professional growth are encouraged. We also recognize, as industry leaders, that we have an increasing responsibility to the communities in which we reside.

At BNR, we place a major emphasis on our commitments to our customers, our people, and the community at large.



Our Mission

As we proceed toward the year 2000, BNR's mission is to strategically manage technology in a way that gives the products and services of our parent companies, Northern Telecom and Bell Canada, sustained competitive advantage in the marketplace.

Management Philosophy

Constant change characterizes the communications industry and consequently, BNR. Our management philosophy represents BNR's goals for a dynamic future and is summarized in the following six-point strategy.

1. *Leadership is everyone's responsibility:* BNR is committed to world leadership in the application of technology to the development of high quality, technologically advanced products and services for communications systems. Consequently, BNR sees leadership as the responsibility of each individual and each project team. Each of us must be actively involved in exploring new opportunities and demonstrating exceptional judgement in the ongoing effort to increase the competitive strengths of BNR, of BNR's parent companies, and of their customers.

2. *We manage innovation:* Innovation and risk-taking flourish in an environment where technical knowledge is complemented by knowledge of the marketplace and an understanding of the needs of the customer, where mistakes may be a necessary part of the learning process, and where the experience and expertise of all our people can be pooled. To ensure continued successful innovation, we must pioneer revolutionary applications of technology in the future as we have done in the past, and we must effectively manage the risks intrinsic to innovative thought and action.

3. *Excellence is our benchmark:* At BNR, we believe that excellence depends on our performing a total job of the highest quality, and delivering the product on schedule. A total job requires understanding all the implications of our design decisions as they affect cost of production, manufacturability, marketing, sales, installation, maintenance, and service. High quality design is essential to BNR's reputation for excellence. We are committed to acting on these values by building quality into every product.

4. *We contribute to our customers' success:* The success of our parent companies and their customers is inextricably intertwined with ours. We are committed to understanding the needs and real values of our customers better than our competitors do, responding to their needs quickly, providing a wide range of services, and giving the best quality customer support available in the market today.

5. *People are our most valuable resource:* BNR hires outstanding people in all disciplines. We try to provide a safe, healthy, and non-discriminatory environment, one in which people can broaden their scope, skills, and knowledge. Our people are encouraged to lead, be competitive, and take chances, and we recognize and reward exemplary achievement. Opportunities for growth, advancement, and professional satisfaction are inherent in BNR and its parent companies. As well, we have a highly competitive compensation and benefit package.

6. *We're part of a larger community:* BNR recognizes the valuable interdependence between us and the corporate, academic, scientific, and local communities. We encourage the exchange of people and knowledge with Northern Telecom and Bell Canada, and we support and collaborate with academic communities in the same way. We actively participate in technical and scientific symposia, conferences and other forums worldwide. We contribute to, and encourage our employees to participate in, the economic and social development of the communities in which we operate.

Corporate Structure

The following chart shows the relationships between the various affiliated companies. The chart is not intended to denote legal or parent-subsidiary relationships. It simply reflects the administrative organization of BNR.



Northern Telecom Limited

Northern Telecom Limited is BNR's major shareholder and parent company. A ceaseless search for innovative products and technologies has produced designs that have made Northern Telecom a major supplier of telecommunications equipment: the second largest in North America and the fifth largest manufacturer of telecommunications equipment in the world.

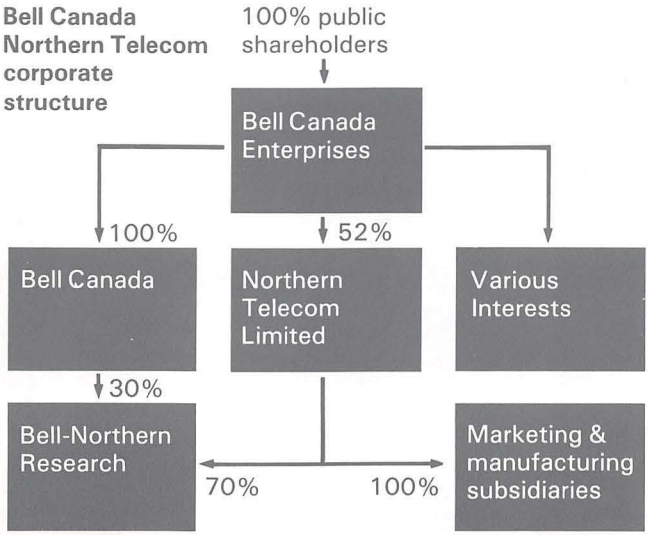
Northern Telecom is a multi-billion dollar company and employs more than 48,000 employees. It operates manufacturing plants located in Canada, the United States, the Republic of Ireland, Turkey, Brazil, the United Kingdom, and Malaysia.

Principal products include business communication equipment, electronic office systems, subscriber apparatus, cable, outside plant, test equipment, central office switching equipment, as well as power and transmission equipment.

Bell Canada

Bell Canada is the largest telecommunications company in Canada. It employs more than 53,000 people and is the principal supplier of telecommunication services in the provinces of Ontario and Quebec, and in parts of the Northwest Territories. Bell Canada is one of the parent companies of BNR, and its customers benefit from the products, systems and services designed by BNR and manufactured by Northern Telecom.

Bell Canada Northern Telecom corporate structure

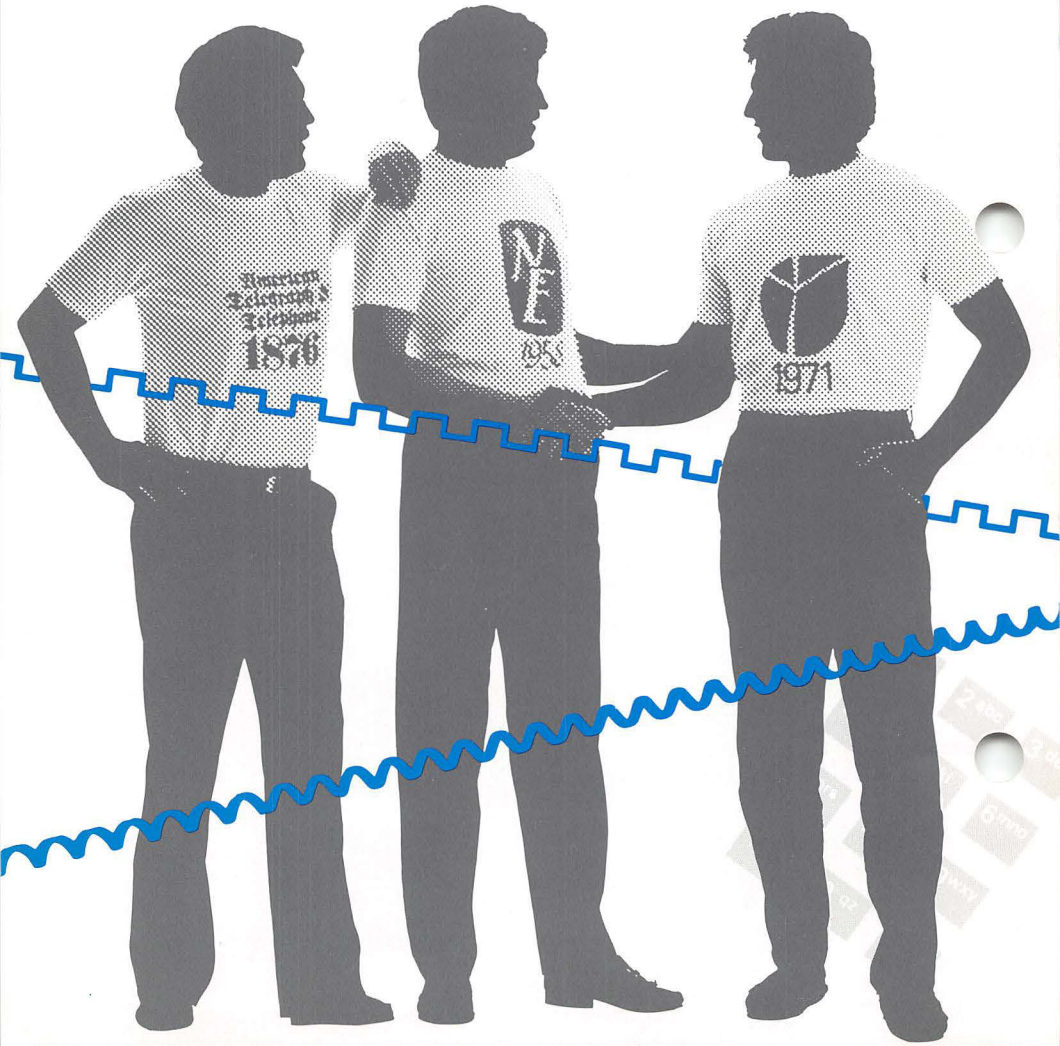


History of BNR

The history of BNR is the story of an evolution based on technological opportunity and market awareness.

In 1958, Northern Electric Company (now Northern Telecom) formed a research and development division to provide its own source of proprietary designs. Continuing reliance on manufacturing products based on AT&T designs was seen as not meeting the long term goals of Northern Electric Company. As well, AT&T designs were not entirely suitable for the Canadian telecommunications environment which the company services through its parent company, Bell Canada.

Out of this research and development division emerged BNR, created as a separate company in 1971 to support the national and international sales effort of Northern Telecom, and the network/systems components for Bell Canada. The R&D arm became a separate corporation with its own proprietary designs capable of competing with the best on the market.



When BNR was established in 1971, less than 17 percent of Northern Telecom's revenue was from proprietary designs. Today, with BNR's effort, the figure exceeds 90 percent.

Through the development of its own technology and products, BNR has helped make Northern Telecom the largest equipment supplier of fully digital telecommunications systems in the world, and a major supplier of information management systems for the office. Through its ongoing development of the digital network, BNR has also contributed to the success of Bell Canada, one of the most efficient telecommunications companies in the world.

BNR is a market-driven company, committed to world leadership in the application of technology, to meeting the real needs of its customers, and to the development of high quality, high growth products and services for communications systems. BNR has achieved world renown for its innovative designs and applications of technology.

The Coming Decade

The digitization of voice has turned the telecommunications network into a total communications system. This capability leads to challenging opportunities:

- the transmission of all kinds of information (voice, data, graphics, and image) over the network
- the development of communications products that can process different forms of information at the same time
- the simultaneous processing and presentation, on one terminal, of information from different sources
- the development and introduction of very complex conferencing arrangements that combine voice, video, and data
- the gathering and processing of data for use, first in the business environment, then in the home
- the use of a telecommunications network as an advertising medium whose terminals can transmit, select, and retain specific information required by the user

More foresight, boldness, and analytical ability than ever before will be required to orchestrate technology to meet the increasingly complex and diverse needs of a rapidly expanding and better-informed market.

At BNR, managing innovation in the face of constant change is a way of life!

The Role of Our Labs

Our labs in the United States, Canada, and the United Kingdom are a direct response to the future challenges facing BNR.

Although each lab has its own established objectives, in combination they represent the strategic direction of BNR. BNR expects to achieve world leadership, and a network of labs is a key element in our strategy to achieve it.



Our competitive strength and success come from several key factors that are at the core of our management philosophy:

1. *Market Proximity:* We must have a presence within the key market areas so we are close to major NT customers. This physical proximity ensures that we will get to know the customers' needs intimately.

2. *Managing Innovation:* Each lab must understand the total job, from designing the product to meet customer specifications to providing services in the field.

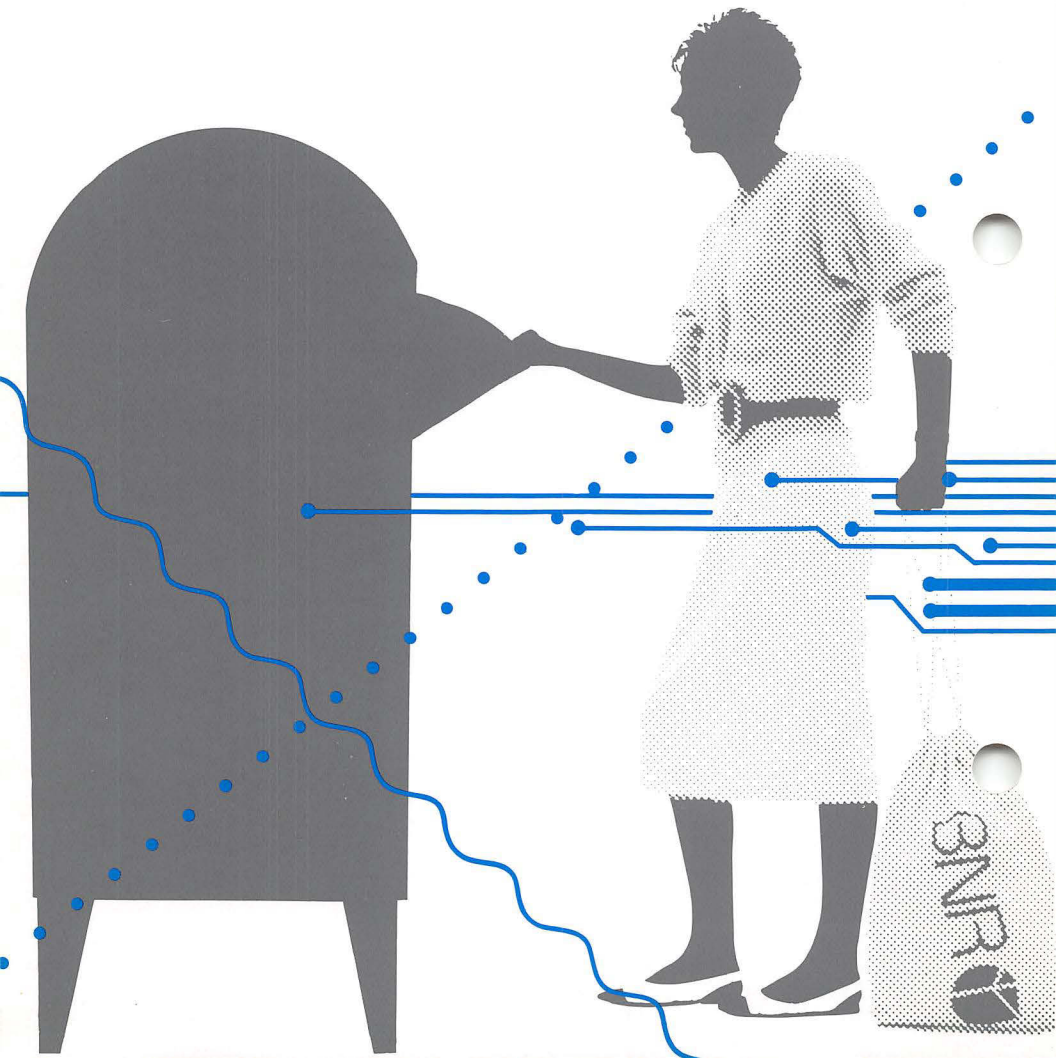
3. *Diversity of Objectives and Talents:* Each of the labs must be able to take basic BNR designs and adapt them to meet the needs of the local customer or the designated market segment.

4. *Integration With BNR's Mission:* While accomplishing its local, specialized goals, each lab must be committed to the BNR mission if BNR is to achieve and sustain world leadership in this highly competitive market.

Locating our labs in various places where NT has major markets makes it possible for us to analyze and understand market trends, know customer needs intimately, deliver high quality, high growth products, and set and meet realistic expectations and schedules.

This diversity of focus and strengths in our labs broadens our overall scope, and at the same time refines our specialized capabilities. BNR is one company developing and building on the knowledge of its people, its project teams, and its labs in all locations.

Mailing addresses



Canada

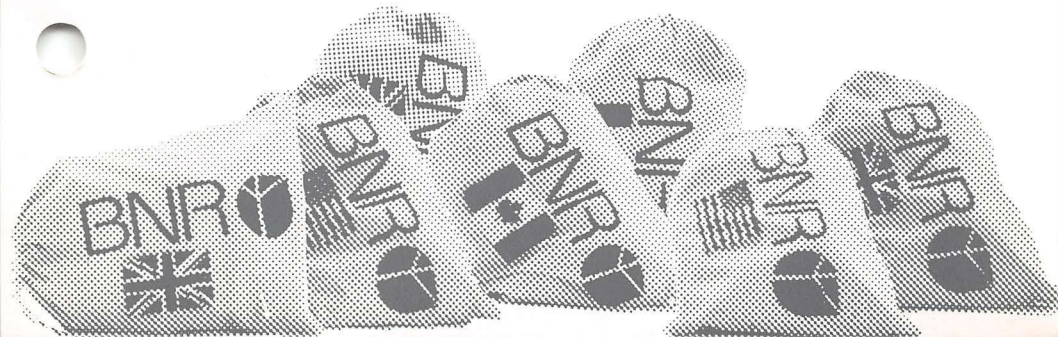
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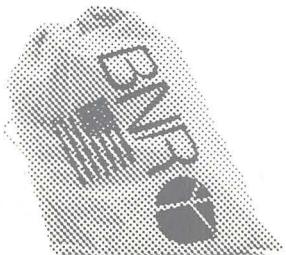
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Organization



Organization

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Research and development at BNR is carried out in four major organizations, which are further subdivided into divisions, or in some cases, functional groups. The research and development organizations are supported by three groups: Human Resources and Administration, Corporate Development, and Finance.

Divisional structures are flexible so that, as technology changes, the organizational structures can change. Specialized groups provide the diverse skills required for successful product development. Although these groups are organized under specific divisions for reasons of resource management, their skills and services are available company-wide.

Currently, BNR is organized as follows.

–Networks Products Group

–Office Products Group

–Hardware Technology Development

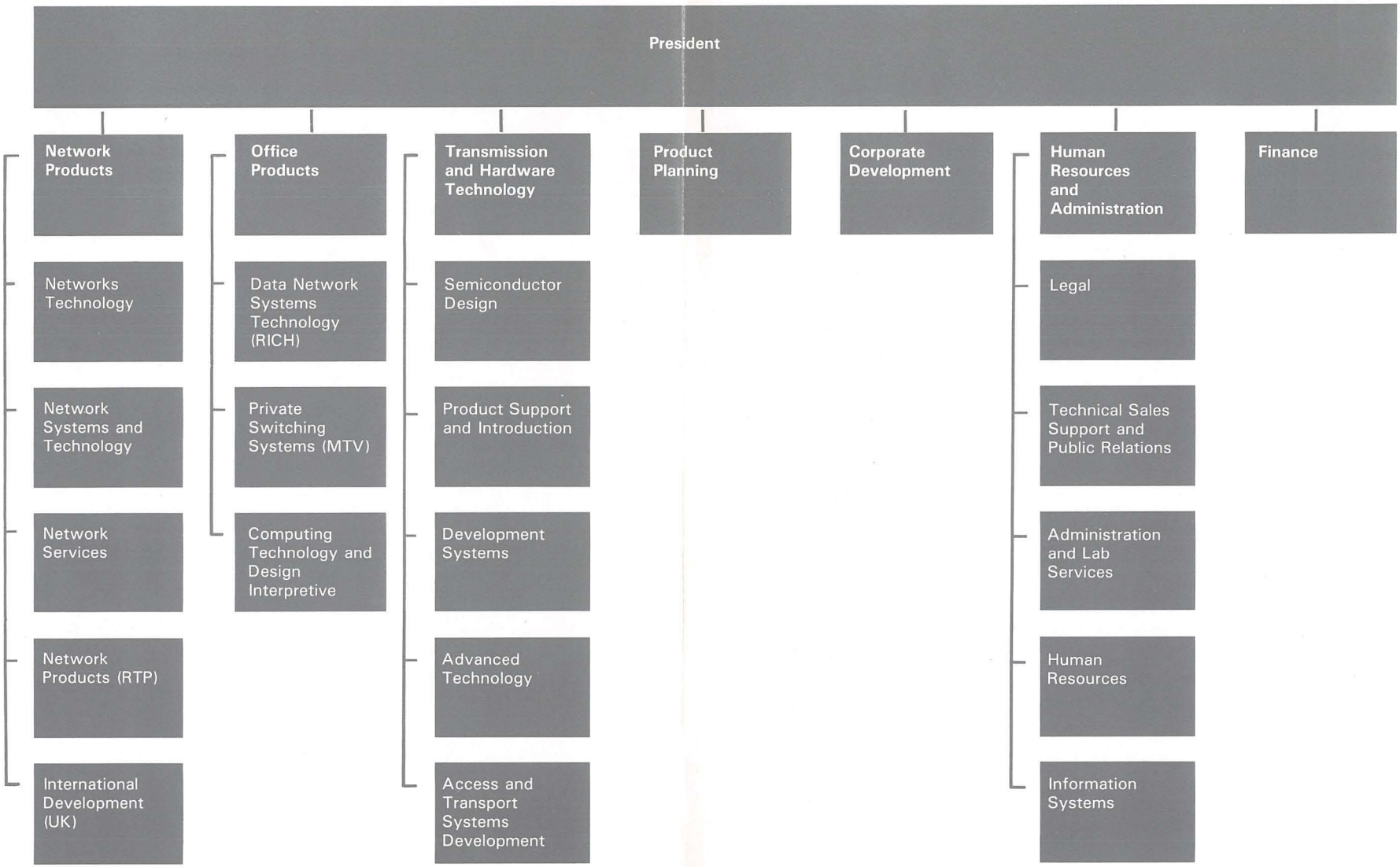
–Human Resources and Administration

–Corporate Development

–Finance

–Design Support

The structure and mission of each group is described on the following pages.


President
Network Products
Networks Technology
Network Systems and Technology
Network Services
Network Products (RTP)
International Development (UK)
Office Products
Data Network Systems Technology (RICH)
Private Switching Systems (MTV)
Computing Technology and Design Interpretive
Transmission and Hardware Technology
Semiconductor Design
Product Support and Introduction
Development Systems
Advanced Technology
Access and Transport Systems Development
Product Planning
Corporate Development
Human Resources and Administration
Legal
Technical Sales Support and Public Relations
Administration and Lab Services
Human Resources
Information Systems
Finance

Network Products Group (NPG)

Network Products is responsible for the development of an integrated family of network switching, transport, access and operations for Northern Telecom's telecommunications carrier markets. The following divisions and organizations form the Network Products group.



Network Switching

The Switching development groups, located in Ottawa, Maidenhead and RTP, are responsible for the design of the Digital Multiplex System (DMS) family of voice and data switches, and the DPN family of packet data switches. These switches serve both the local telephone interchange carrier and large private networks customers.

The development of these systems is based on the latest software, silicon and optoelectronics technology advances, and is concerned with technology challenges such as very large scale integrated (VLSI) design, switching system architecture, fiber optics, computer-aided design, and multi-bandwidth switching.

Access & Transport

The Access & Transport Development groups are responsible for developing network access and transmission products for the public telecommunications market. This division is based in the Research Triangle Park (RTP) laboratory with transport and some access development groups located in Ottawa.

The Access & Development department is NPG prime for the American market, and performs the following activities:

- carries out application research for the U.S. market in close collaboration with operating companies and the Northern Telecom Integrated Network Systems (INS) product line group
- develops application software for DMS for the U.S. customer base
- provides product introduction and field support for the U.S. INS installed base
- serves as BNR's prime access for the identification, development, and introduction of the access product line

Networks Technology

The Networks Technology group identifies and researches future opportunities in products and services for telecommunications networks. These opportunities are then related to the needs of the end-user market, operating telephone companies, and interexchange carriers.

To ensure close coupling to market needs, the division has groups located in RTP, Montreal, Maidenhead, Mountain View and Ottawa.

Through close interaction with operating customers, NT marketing and product groups, and the development teams, the division identifies and synthesizes future telecommunications opportunities in network architecture, hardware systems, and communications services. These are then translated into detailed system and product feature and function requirements to guide the product development process.

The Montreal lab is the focus for the development of computerized network planning tools that are used by telecommunications carriers to plan and engineer their networks.

About DMS

In the late 1970s, BNR introduced digital technology to the telecommunications industry, radically changing the nature of the marketplace. The following brief overview gives you some idea of the scope of preparing DMS products for NT customers, as well as an indication of the direction that the evolution of these products will take.

Software Design

Batch Change Supplement Process
The Batch Change Supplement (BCS) process is the delivery vehicle for DMS-100 software. It consists of a series of milestones used to measure progress during the six phases of software development:

1. product definition
2. detailed design
3. implementation of design
4. testing
5. product verification
6. product support

Our database management and source management tools have been designed to complement the process. Each BNR lab involved in developing DMS-100 software uses the same process. This has enabled management to coordinate the activities of hundreds of designers in various geographical locations.

Code Inspections
Code inspections are a proven method for producing higher quality software in less time. Each line of code is carefully examined to determine the function being implemented by the program. The technique is so effective in identifying errors that it has been adopted universally throughout the DMS project as a key part of the development cycle.

Code inspections are conducted according to the following criteria:

- A code inspection is always a formal process with all participants trained in the technique.
- A trained moderator oversees the inspection and is responsible for guaranteeing that the inspection adheres to its main goal of detecting errors.
- It requires knowledgeable and prepared designers who understand software design and the base system on which it is built.
- All team members must understand that the goal of code inspection is error detection, not error correction.
- Software is inspected by paraphrasing each line of code or translating it into English to reveal the functions being implemented by the program. This is done to reveal errors in the code and is a very demanding mental exercise. It is so demanding, in fact, that code inspection is done for only two hours at a time.

The evidence proves that code inspections actually save time while achieving much higher product quality. The time spent in code inspections is more than recovered in shorter, more efficient testing intervals.

Test Tools

BNR is committed to assuring high quality in all its designs and products. With this in mind, the formal steps in the design process are supported by a number of tools that help the designers and verification staff to test features.

BNR has developed feature, traffic, and fault insertion simulators that can be attached to a system being tested. The simulator can help to verify that the system functions as expected according to its product requirements.

One of these testing systems, the Test and Traffic Simulator (TATS) is a tool that can test the Digital Multiplex System (DMS). TATS simulates a set of telephones, trunks, and users automatically to verify telephony features on the DMS. It can also simulate large traffic volumes such as could be expected on a telephone switch serving a large city.

Without tools such as TATS, the testing of a product to assure high quality would be largely a manual process and thus expensive, time consuming, and prone to error.

Hardware Design

DMS Enhanced Core

DMS Enhanced Core is a technology upgrade program for the DMS-100 family of digital switches. The three existing "core" components of the DMS—the Central Control Processor, the Central Message Controller, and the Network Module—have been redesigned to give an enhanced set of functions using the newest technology.

The major objectives of Enhanced Core are:

- to increase the call carrying capacity significantly
- to reduce significantly the size of the DMS-100 core
- to improve the manufacturability and reliability of DMS-100
- to provide an infrastructure to allow the development of new services
- to provide a distributed architecture for feature development
- to develop a hardware/software base applicable to other NT products

The development of Enhanced Core adheres to the DMS-100 philosophy of evolution rather than revolution. Product development for hardware and software are targeted to both existing and enhanced cores. Enhanced Core development is 100% compatible with existing DMS peripherals and allows existing switching offices to be upgraded with a new core with minimal service interruptions.

DMS-100 Exploratory Department
The DMS-100 Exploratory department operates between pure research and direct product development. It is concerned with developing and prototyping new ideas and products that may find their way into product development.

Exploratory often takes new technologies that emerge from the research world, and is the first to find applications for them.

Many current DMS products or soon-to-be products have their roots in Exploratory. The feasibility studies, prototyping, small trials, and demonstrations from Exploratory have led directly into large scale development projects.

Some examples of recent exploratory activity that has gone directly to product development are the Data Unit family and electronic business sets for DMS-100, and the Integrated Services Digital Network (ISDN) development project. Other technology goals that are under longer term product development include digital signal processing techniques for proposed DMS-100 line cards.

Integrated Services Digital Network (ISDN)
A recent significant development in Northern Telecom's DMS switch is ISDN, which for the first time combines three different existing products—DMS, terminals, and packets (DPN)—into one integrated product.

ISDN is a major event in the telecommunications industry. It combines circuit and packet switching technology with high speed transmission capacity to provide a variety of services through a single connection in existing and expanded telephone and telecommunications networks. It will, to a large extent, decide the sale of future switches.

ISDN involves a multi-divisional effort with a project team made up of staff from two BNR divisions. These developers perform product planning and product development functions. ISDN is also a tricorporate effort; BNR, Northern Telecom and Bell Canada are working to bring the product to the market in the next few years, and have already staged more than a dozen customer trials. In 1986, BNR and NT succeeded in placing North America's first ISDN central office into service in Phoenix, Arizona. However, actual product introduction is targeted for beyond 1989.

Office Products Group (OPG)

Northern Telecom has developed the "OPEN World", a marriage of computers, communications and technology which uses the office products and technology developed by the Office Products group. The line of products and systems includes computer and telephone display terminals, integrated voice and data terminals, workstations, small key systems, PBX, videographic products, teleconferencing, and various other office systems and data networks.



The following four divisions and organizations form the Office Products group and are described on the following pages.

–Private Switching Systems

–Information Services

–Small Systems and Networks

–Computing Technology and Design Interpretive

Private Switching Systems

The Private Switching Systems division, located in Mountain View, develops office communications systems which handle combined voice and data.

The sophisticated Meridian SL-1 business communication system is a major ongoing project. Increasingly, such systems are being integrated into private networks and are being used in conjunction with information processing applications.

As well, through the Mountain View laboratory, BNR monitors developments in the Silicon Valley Area.

Information Services

Reporting to the Private Switching Systems group in Mountain View, this Toronto lab is responsible for the development of Information Services. This area of responsibility includes application services for the Meridian Packet Transport Equipment (PTE), such as integrated voice and text messaging.

Projects include the continued development of services on the Meridian PTE, development and enhanced voice storage and response services, and research into artificial intelligence and software tools.

Small Systems and Networks

This division has groups in Ann Arbor, Richardson and Ottawa, and is responsible for the development of a series of office products and systems.

The Ann Arbor groups are in charge of communications and computing systems (DVS), computer terminals, and departmental systems. Projects include a small, integrated voice and data office controller, DV-1, proprietary terminals for NT, and support of NT Advanced Office Systems division on existing distributed data processing and online equipment. The DVS computing system,

built on the XMS system and used by products such as DV-1, Data Network Controller (DNC), and Data Network Gateway (DNG), is managed at this location as well.

The BNR Richardson lab develops products for several diverse marketplaces. The large, feature-rich SL-100 business communication system, the DV-1 based data communication system, and the Meridian network management system (NM-1) provide some of the basic building blocks for corporate voice and data networks. Networking and connectivity with other NT products such as SL-1 and the PTE and OEM devices are verified here.

In addition, the Richardson lab develops Data Network Systems (DNS), switching and access products for the Interexchange Carriers and Cellular Mobile Radio networks.

Computing Technology

The Computing Technology group, located in Ottawa, develops advanced hardware and software system designs that are used by other BNR design groups as a base for a variety of products. The XMS system is an example of one of these designs and it includes operating systems software (the X-system), programming language design (BNR Pascal), and database management software.

The Computing Technology group is primarily concerned with selecting and advancing emerging strategic computing and software technologies and includes capabilities such as RISC processing, optical fiber-based local area networks, and advanced software techniques.

The XMS System: The XMS system consists of a set of hardware and software building blocks used by a wide variety of product development groups throughout BNR.

The operating system software for XMS allows developers to build distributed systems, with software tasks operating on multi-computer systems. This makes the construction of multi-computer complexes and local area networks possible.

Products developed from the XMS base benefit from a head start. They share an environment used by other products and profit from an ongoing stream of XMS development as well as from a system designed to match the demands of networked computing.

Distributed computing systems built from XMS workstations are used extensively within BNR as development vehicles for large and small projects alike. The Software Development Environment (SDE) provided with the workstations supports compiler, library, editing, and software project management functions.

XMS is now being fully transferred into NT commercial product lines. Ongoing support and evaluation will be driven from the DVS system.

Design Interpretive (DI)

Design Interpretive brings the human element to technology. DI's mission is to help BNR's parent companies, Northern Telecom and Bell Canada, achieve competitive advantage through user friendly designs. Experts in DI keep engineers and designers aware of user needs; products developed at BNR, consequently, are designed for user appeal and ease of use.

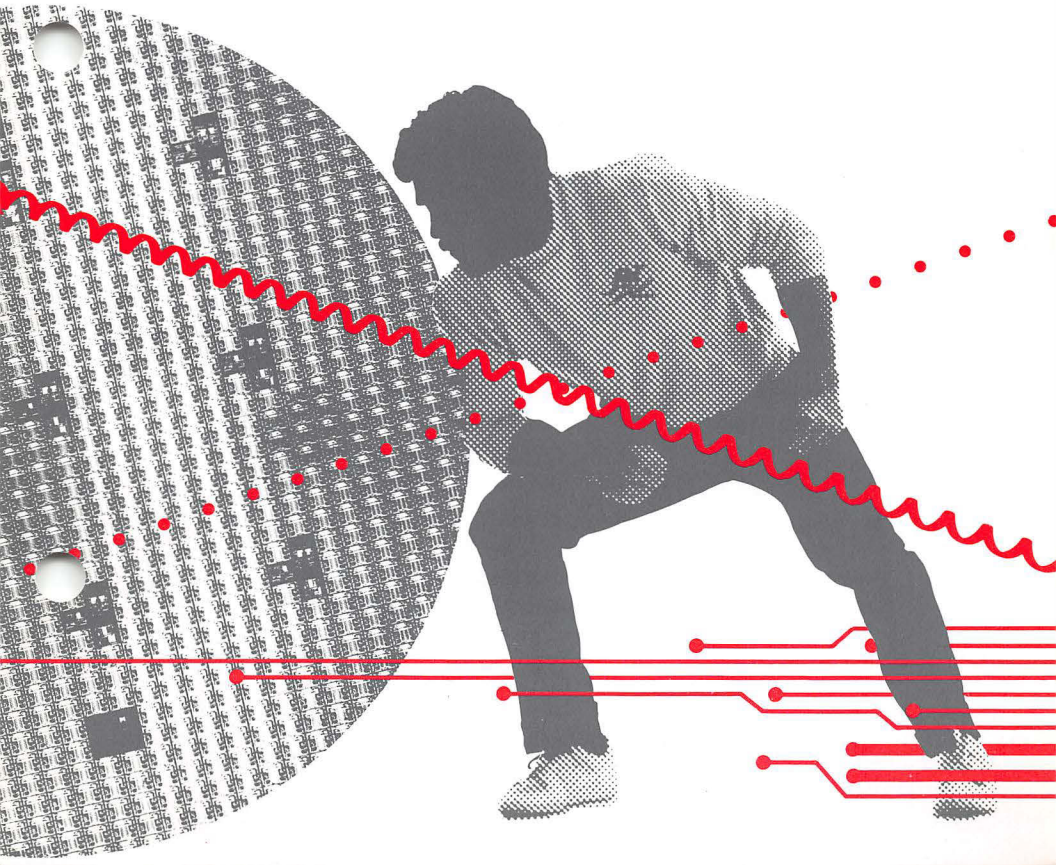
Located in Ottawa, DI is concerned with the configuration of terminals, workstations, office systems, and common equipment, together with their associated features, services, applications, user supports, and market deployment strategies.

DI speciality skill areas include industrial and graphic design, hardware and software interface design, behavioral science and market research, acoustics and psychoacoustics, speech input and output applications, and mechanical packaging.

Hardware Technology Development 11

The Hardware Technology Development group is located in Ottawa and is responsible for the application of microelectronics to all BNR designs.

Staff members skilled in large scale custom integration (LSI) design and microelectronic application provide new and advanced components for products designed at BNR and manufactured at Northern Telecom.



Engineering Design Systems

The Engineering Design Systems group works on the development of software tools which can be used to capture and standardize new and existing designs. It also prepares manufacturing and testing information and processes.

These software packages can increase or enhance design accuracy, integrity, and related management control while they decrease design cycle time and subsequent revisions. The group's primary product, Circuit Board Design System (CBDS), include the following software packages:

- Integrated Engineering Database/Product Administration System (IEDB/PAS)
- Silicon Design System (SDS)
- Silicon User Design System (SUDS)

Silicon Design Technology

The Silicon Design Technology group supports company-wide application of the Silicon User Design System (SUDS) that allows chips to be designed directly by user groups.

The development and support of design aids for both the full-custom Silicon Design System (SDS), and SUDS is carried out by the Integrated Circuit CAD/CAM departments.

Power & Magnetic Group

The Power & Magnetic group develops custom power systems for various products designed at BNR. This division enjoys close ties with Northern Telecom Electronics, which manufactures our proprietary microelectronic designs.

Electronic Modules

Power supply design is complex and crucial to the success of any project. The Electronic Module group provides expertise in state-of-the-art techniques, and works to satisfy, cost-effectively, the broad range of BNR product requirements from a minimum set of common building blocks.

Because power supplies have an impact on cost and reliability, as well as on mechanical and thermal designs of a sub-system, power requirements must be accurately defined early in the design process.

Contact this group for a power module which will form an integral part of your design.

In addition to being able to design power modules, the Electronic Module group has the expertise to design other high performance modules. They can work with printed circuit boards, ceramic thick-film, and polymer thickfilm, with high performance applications in large, high speed memory design, precision analog/digital hybrids, or lowest cost electronic packaging.

Be sure to consult this module applications group while still thinking about packaging to take full advantage of the many trade-offs available while in the paper design stage.



Advanced Packaging

The Advanced Packaging group sets the pace for the use of new chip and circuit pack packaging technology in BNR and NT. Today the group is establishing precedents in the use of advanced levels of surface-mount technology, and is developing sophisticated bare-die and high-speed packaging techniques.

The group achieves its results by:

- working with system designers to define new packaging technology needs
- running joint programs with Northern Telecom process development groups to develop new packaging technologies
- developing new packaging design methods
- implementing lead designs to test in the latest technologies prior to general release across the design community

This group is located at Corkstown in Ottawa, and is a multi-disciplinary team of application engineers and packaging scientists.

Human Resources and Administration

The Human Resources and Administration division supports the research and development effort by providing a framework of professional and administrative services.



The functions of this division include all aspects of human resources management, information systems, employee health services, occupational health and safety, environmental protection, public relations, technical education, technical information, office and building services, facilities engineering, legal services, purchasing, and contract administration.

For more information on all of these services and more, read the next section in this handbook, entitled "You and BNR".

Legal Services

The primary function of the legal department is to ensure that BNR complies with the laws governing its existence as a legal entity, and with the laws and regulations governing the carrying on of its business. For example, BNR must comply with fair employment laws, occupational health and safety laws, environmental protection laws, and many others, at each of its locations.

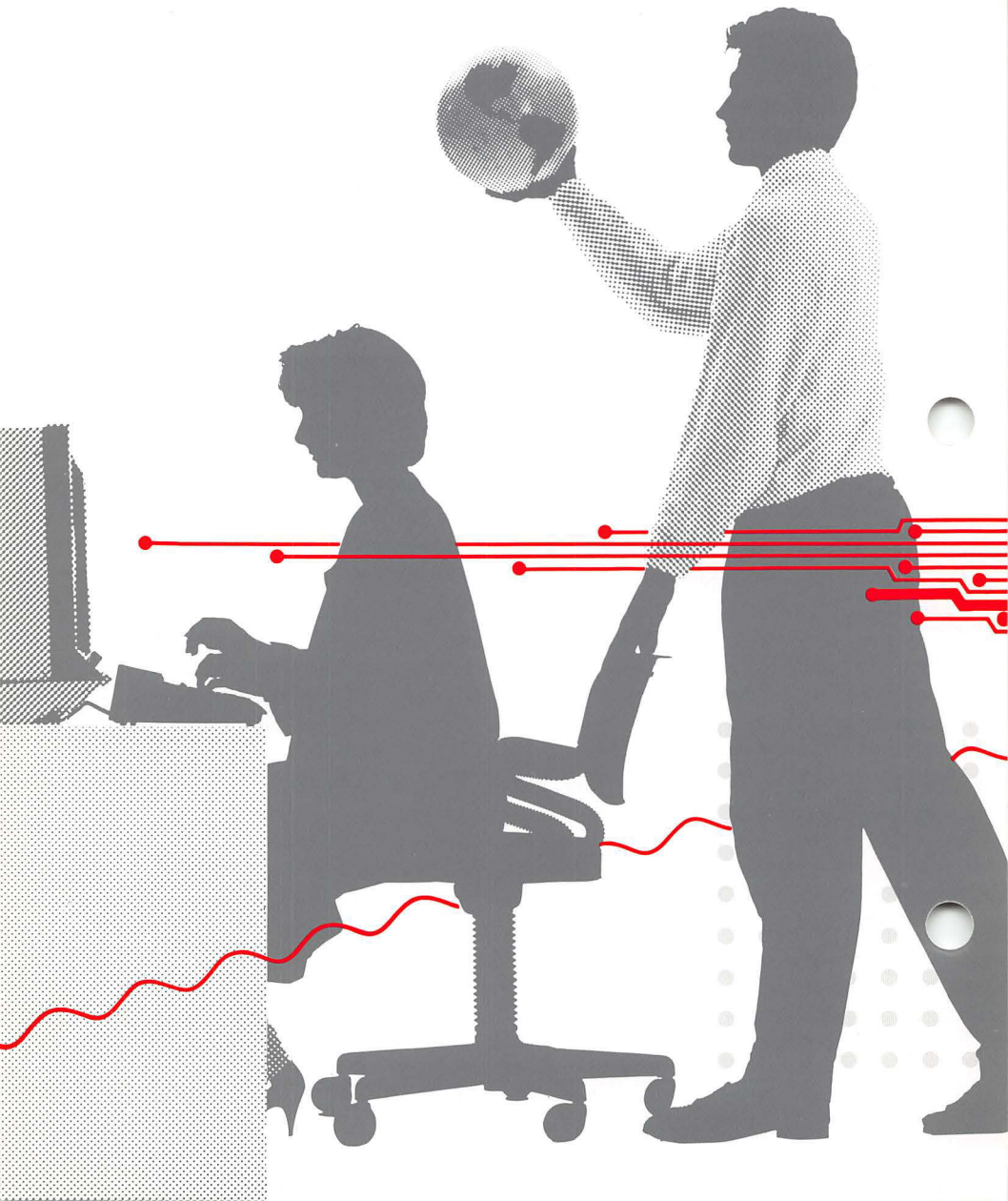
The legal department also assists management and employees in understanding the policies and procedures applicable to the day-to-day business operations of the company. This department deals with business ethics, conflict of interest, and the rules affecting contractual rights and obligations where BNR is buying or selling goods or property.

The department works closely with Northern Telecom's legal department in Canada, the United States and the United Kingdom, and with outside law firms.

Within reasonable limits, the department will give guidance to employees seeking answers to legal questions.

Corporate Development

The role of Corporate Development is to oversee the development of technology that will be needed to give Northern Telecom's future products technological advantage in the marketplace. Every year Corporate Development coordinates the preparation of a five-year strategic plan with the responsible line groups. The focus of the plan is on how to apply funds to technological development over the long term.



Corporate Development ensures that we have an adequate perspective about what technologies are coming, which ones we should devote our resources to (since we cannot explore all of them), and to what extent we should develop them so we have the right product at the right time. As well, Corporate Development makes sure that we have in place the people who understand these technologies, the processes for developing them, and the tools we need to distribute them.

Corporate Development supervises the funding of two programs: the Common Program and the Capability Program. The Common Program deals with the immediate future, supporting those activities that many people will need shortly and making sure we're adequately positioned technologically. The Capability Program looks to the long-term future, with a view to identifying and developing technologies and application ideas that will give NT the competitive edge in the marketplace.

Corporate Development supports various centers of excellence within the line organizations. In these centers are key BNR staff, recognized world experts in their field, who specialize in technology development, that is, in developing the tools, the people, the processes, and the education for technology transfer. The XMS group, the Digital Signal Processing group, the Human Factors group in Design Interpretive, and the Exploratory Optoelectronics Devices group are examples of centers of excellence.

As well, Corporate Development encourages extensive university liaison to assist with research and to develop future talent.

The Innovation Center

Northern Telecom is a world leader in products and services for the international telecommunications market. BNR must continuously develop new products to enable NT to enter new telecommunications markets. To accomplish this, we recognize that our greatest asset is the inventiveness of our employees.

The Innovation Center, within Corporate Development, supports talented and innovative employees who may have promising concepts for products, services or processes, but who lack the means of exploring them. The Innovation Center works with these entrepreneurs to evolve and shape these concepts into potential businesses.

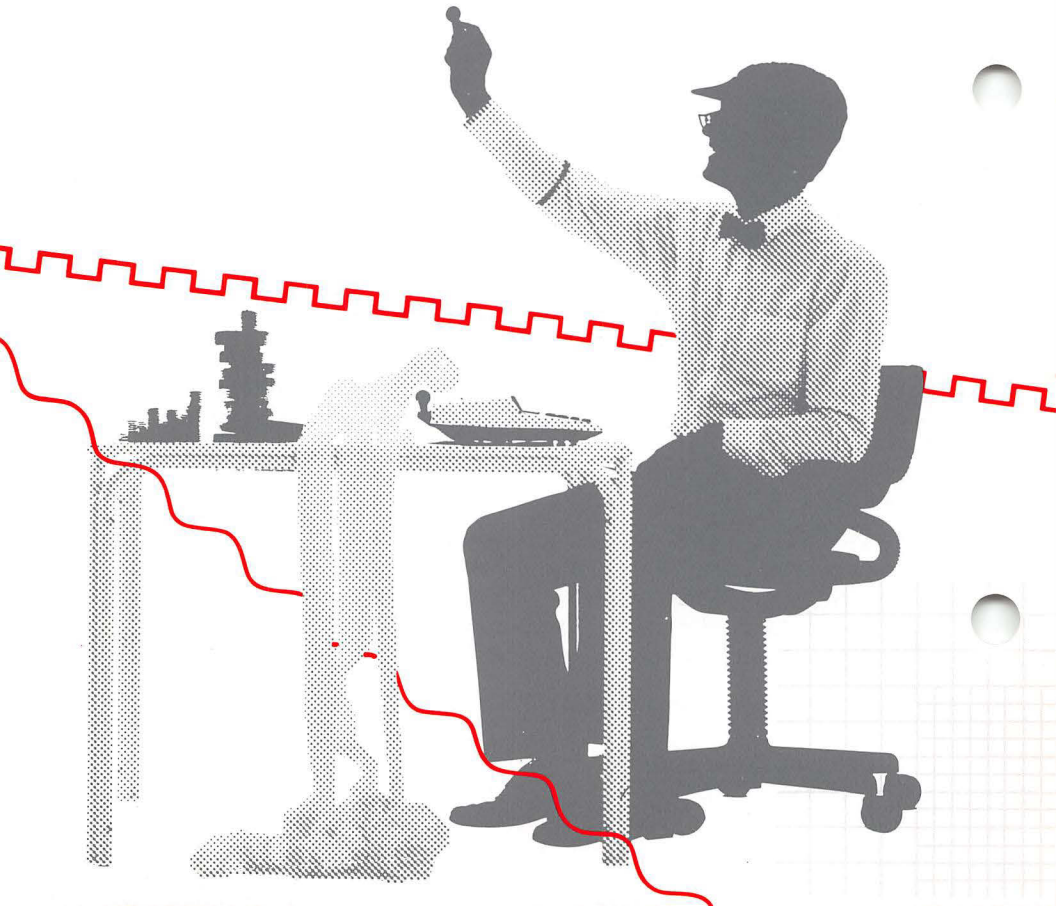
The center uses BNR's resources and provides access to our own experts to assist the entrepreneur to develop the concept, select appropriate participants, plan the direction of the work and participate in the resulting project. The Innovation Center supports the project until suitable sponsorship is arranged.

For more information, contact the Innovation Center.

Finance

The Finance group establishes financial policy and ensures that individuals and groups follow this policy by monitoring activities. This group provides accounting and treasury services, including taxation, payrolls, and accounts payable. It also advises management on its review of investment opportunities.

Finance coordinates the setting of budgets and quarterly revisions or forecasts. It interacts directly with NT and other parent or subsidiary companies on financial matters.



The R&D Project/Case Structure

In financial terms, BNR is described as a break-even organization. This means that only expenses incurred are billed to the client.

BNR uses a project/case structure which means that cases are set up to collect the costs that apply to specific projects. These cases make it easy to bill clients for the costs of a project as the costs are incurred. In this way, BNR bills our Northern Telecom and Bell Canada clients on a regular basis throughout the life of a project.

The process works as follows.

1. The client makes a project request.
2. A project agreement is initiated.
3. Case numbers are assigned to collect costs for that project.
4. Costs are charged to cases as they are incurred.
5. The client is billed monthly for the charges against these cases.



The Departmental Structure

A departmental structure exists within BNR to support financial reporting, resource management, and control processes. Departments are the base level of this hierarchy and they make summaries of information available for different levels of management.



Line Groups Versus Support RC

BNR departments can be described according to their function, as either line or support groups. Line groups focus primarily on research and development activities funded by clients.

Support departments, such as Finance, Human Resources, Information Services, and Purchasing provide a wide variety of services that aid the R&D process. Support groups can provide their services directly to the line groups. Where this is not feasible, the costs for support services are included in loaded labor rates which are used to charge cases, and in this way bill clients on a monthly basis.

The Financial Organization

The Finance department interacts directly with all line and support organizations. Central services such as payroll, accounts payable, treasury, tax, and systems are administered by a Corporate group.

There are also specific Finance departments in each division, headed by a Divisional Controller who provides local and divisional financial services and advice.

Capital Asset Transfer or Disposal

When a department no longer has use for an asset, it can be transferred to a department that does have a need for it. Otherwise, it can be forwarded to the asset pool for disposal.

If you're transferring or disposing of an asset outside of the Canadian operation and that asset is worth more than $5000.00, you must notify the BNR Tax department. For details, consult your manager or contact the Finance department.

Cash Advance

You can get a temporary cash advance in Canadian dollars or in American funds for travel-related expenses. These advances are charged to your expense account and must be cleared on an Employee Expense report. You should return any unspent money to the cashier promptly.

If you have not cleared your cash advance on an Employee Expense report or by returning unused cash after 60 days, BNR will not issue you any further cash advance until your account has been cleared.

Employee Expense Report

If you request reimbursement for money spent on a business trip, you must report all the money spent for that business trip on one Employee Expense report. Your manager is responsible for approving your expense reports and must ensure that you have provided all the required information and have attached all the original receipts. Your expense report must be approved by your immediate manager and, if the total amount requires it, your manager will forward it to the next level of management for authorization.

You must prepare and submit your expense report within five days after returning from a trip.

Taxing

Payroll withholding tax is based on the applicable tax rates and allowable exemptions. To enable the Payroll department to withhold the proper amount of income tax, you should have a current TD1 form on file (additional TPD1 for employees working in Quebec).

New employees usually provide this information during the Orientation session on the first day at work. To verify that you have provided this information, contact the Payroll department.

Each year, the personal, spousal, and child exemptions change as well as your personal circumstances. To make sure your file is up to date, contact the Payroll department.

Direct Deposit

BNR offers direct deposit service and it has become the standard in payroll payments. Efficiency, convenience, and dependability are key factors in the success of this service.

New employees sign up automatically for direct deposit service at the Orientation session on the first day at work. Other employees are encouraged to shift from the paycheck method to direct deposit.

When you sign up for direct deposit, you provide a voided check. This is necessary to confirm your bank, branch, and account number, which are encoded on the bottom of your voided check.

Design Support



Design Support

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Successful design combines creative ideas with superior execution. Rarely are all the skills required for complete design found with a single individual or within a group. Therefore, several specialized groups have been established at BNR to provide the necessary expertise in their respective specialties. These groups can make valuable contributions to all phases of a project.

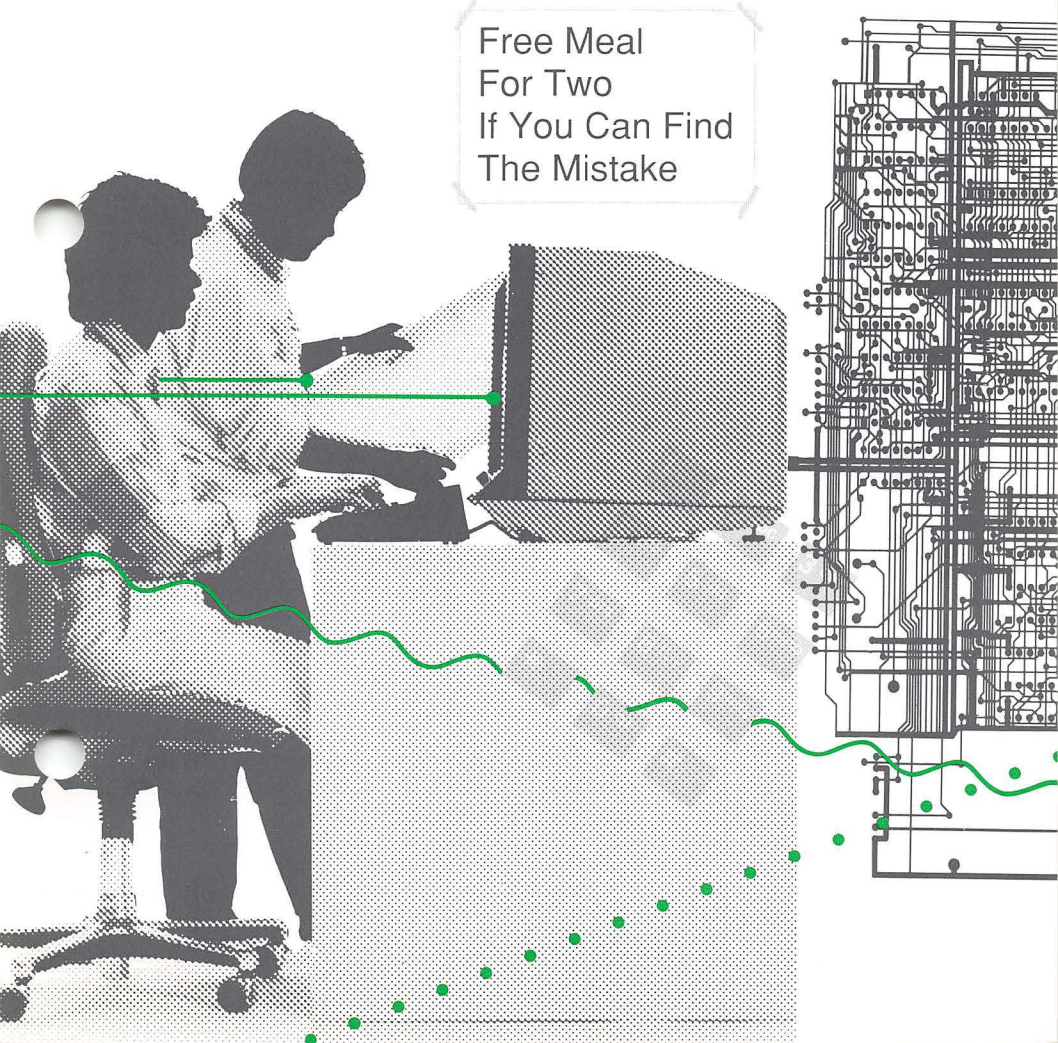
Often the best results are achieved by assembling, for the duration of the project, a single multidisciplinary team drawn from the groups listed here. In this way, project objectives are kept in focus and become the objectives of every member of the team. Clearly, this arrangement must be carefully managed.

The expertise of the major groups is described in the following paragraphs. To contact a group, refer to the Directory of Services in your BNR telephone directory. For groups not listed there, consult your manager. Several groups exist under specific project umbrellas, yet provide services to others in the company.

In all cases, before requesting work from any group, check with your manager to ensure that funding and scheduling issues are dealt with appropriately.

Hardware Design Systems

BNR Hardware Design Systems provide access to a comprehensive set of computer-aided design tools which are tuned to fit the specific manufacturing technology plateaus used in NT. These tools provide capabilities for design capture, simulation, test generation, physical layout, manufacturing interface, and design management.



The BNR hardware design system consists of four key elements:

-Computer-Aided Engineering (CAE)

-Circuit Board Design System (CBDS)

-Semiconductor Design System (SDS)

-Integrated Engineering Database (PAS/IEDB)

The complete design system runs on two dozen IBM mainframes with 5080 graphics and 3278 text terminals. The same hardware platform supports semiconductor, substrate, and mechanical design.

For general information, documentation or training, contact the CAD Hotline at Corkstown in Ottawa.

Computer-Aided Engineering (CAE)

The Computer-Aided Engineering (CAE) system is functionally independent of technology, and is made up of:

-a hierarchical capture system (FUNDES)

-digital simulation and waveform analysis capabilities (FUNSIM/FML, SIMPOST, ZYCAD accelerator, and hardware modeling facility)

-analog simulation and waveform analysis (SCAMPER, ATLAS, SCAMPLOT)

-test pattern and program generation system (HOLIXZ, HPP, TESTGEN)

The CAE system can interface with a large complement of off-the-shelf components like standard serial interface (SSI), medium scale integration (MSI), and very large scale integration (VLSI), or the hardware modeling facility which is presently under development. It can also access NT electronics CMOS3, CMOS4 standard cell libraries, and external semiconductor foundries such as Gate Array libraries (LSI LOGIC, National and Fairchild). With this capability, the CAE system can generate direct interfaces with target foundries.

The system supports a test program generation facility for Sentry VII and GR 18 VSLI testers, and a new facility is being developed for a family of PCP Functional Testers.

The CAE system feeds BNR's Circuit Board Design System (CBDS) for the PCP/Hybrid, and feeds the Semiconductor Design System (SDS) for Semiconductor Layout Automation.

Circuit Board Design System (CBDS)

CBDS provides tools for the physical design and verification of printed circuit board, hybrid, and backplane designs at the technology plateaus required for NT products. It offers the capabilities for:

- automatic placement and routing
- interactive graphics
- design rule verification
- interfaces to manufacturing for electronic transfer
- design change handling

Each development organization or division is responsible for providing terminals and securing computer time for the CBDS service. Schematic input is usually done by designers or technologists using the CAE tools. PCB layout, depending on complexity, is performed by technologists or layout staff assigned to the project.

If you want to order CBDS terminals, direct your request through your manager to your divisional CBDS coordinator.

Semiconductor Design System (SDS)

The Semiconductor Design System (SDS) supports full custom and standard cell design methodologies, and has the following capabilities:

- floor planning and interactive block place/route (TIARA)
- hierarchical automatic standard cell and block layout (AUTOLAY II)
- module generation system (RAM, ROM, PLA compilers such as CLASSIC)
- full custom layout editor (LAYED)
- hierarchical connectivity and design rule checking (OMNI)
- circuit and interconnect parasitic extraction to feed postlayout simulation

SDS emphasizes the workhorse technologies such as CMOS3 (3 microns, DLM), and CMOS4 (1.25 microns, DLM). However, this design system also supports Bipolar, NMOS, and gallium arsenide technologies.

Engineering Information System

The Integrated Engineering Database (IEDB) is the master database used in BNR and NT to support CAD users. It contains detailed technical information on more than 50,000 electrical and mechanical components and can also be used to store completed design data for release to manufacturing.

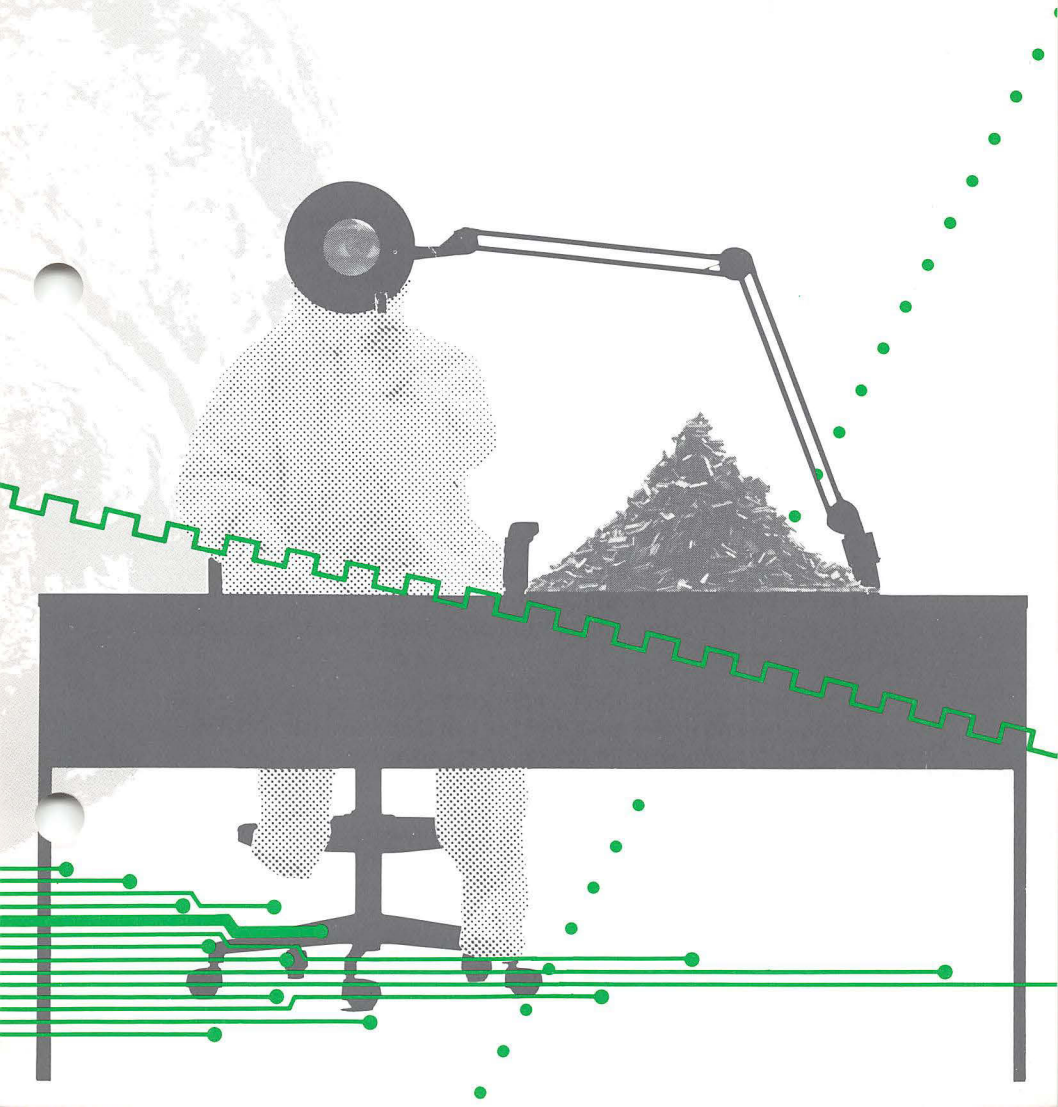
The Product Administration System (PAS) is a new tool which provides vintage control, transfer, and file management for designs created with the CAD system. PAS uses the IEDB as an electronic vault.

A number of specialized groups in BNR and NT keep the data up to date. Daily updates are made to all sites in the network.

Product Support and Introduction

The Product Support and Introduction department (PS&I) has two major objectives:

- to ensure that BNR produces quality designs that guarantee a high standard of reliability and manufacturability
- to ensure that BNR designs meet customer expectations so that NT products gain the competitive edge in the marketplace



PS&I is made up of two large groups: the Product Integrity group which provides support in the areas of reliability and maintainability of BNR designs, and the Manufacturing Technology group that is concerned with the manufacturability of BNR designs.

PS&I helps design teams translate their electronic ideas into working prototypes so designs can be properly tested for reliability, maintainability, and manufacturability, and helps establish benchmark testing results against which the final manufactured product can be measured. PS&I provides support as well by conducting design reviews at various stages in the project to improve manufacturability, component lists, artwork, mechanical drawings, and other outputs required at design transfer.

Product Integrity

The people in the Product Integrity group work as members of the design team to help ensure that designs operate safely and reliably while meeting all regulatory requirements. This group also cooperates with NT Quality groups to obtain field performance results to feed back to BNR.

Like NT Quality groups, Product Integrity operates somewhat autonomously to provide independent design verification. Costly downstream problems can be avoided by including Product Integrity personnel in the design process early enough to assess worst-case functionality, reliability, electromagnetic compatibility (EMC), safety, and other factors. The involvement of the Product Integrity group is both informal, during the design process, and formal, at design reviews.

Electro-Magnetic Compatibility (EMC)

Stringent regulations in all markets governing radiated and conducted EMC require that effective control be designed into a product and not around it. Products must conform to these regulations and must also operate reliably in environments increasingly polluted with EMC. A design that minimizes the generation of EMC usually produces better results than one which merely suppresses unwanted signals.

If you want more information on design techniques, or if you want to arrange testing in the open-field site at Corkstown in Ottawa, call the Electromagnetic Engineering department.

Product Safety and Interconnection

Deregulation of the telecommunications industry in North America and around the world has had a major impact on product requirements. Telecommunications equipment, from telephone sets to central office switches, are now required to meet stringent regulatory requirements in the areas of network protection and safety. To ensure that terminal equipment can be connected to the public switched network without harming the network, products must be tested against interconnection regulatory requirements.

It is not enough to apply a standard to a product. The standard must be applied intelligently, the intent of the requirements must be understood, and the implications of nonconformance must be appreciated.

The Product Safety group provides a full service of consultation, audit, testing, and certification. Designing products with the regulatory requirements in mind is essential and eliminates potentially costly problems.

Manufacturing Technology

The PS&I Manufacturing Technology group at BNR is responsible for generating design guidelines for new technology levels. This function demands a close relationship with various groups: with the design groups to capture new requirements, with NT manufacturing divisions to facilitate technology introduction and determine manufacturability, and with the CAD development group to incorporate into CBDS the newly standardized technology levels.

The development and maintenance of a unique CBDS system for all types of PCB design and applications is a real challenge. The current release of CBDS contains all printed circuit layout technology levels to date. Shorter design time intervals, high output quality, low cost, and product manufacturability are the key ingredients in ensuring improved profitability of new designs.

Mechanical Design

Although architecture and software determine the usefulness of a product, mechanical design plays a key role in ensuring that the mechanical design structure is capable of meeting all hazards in the transport and operations environments, and in determining the long term feasibility of the design.

The Mechanical Design people are divided into three groups. One group in Ann Arbor works on switching and one in Ottawa works on terminals, while a third handles a broad range of transmission, outside plant, and computer products. These groups work in conjunction with Design Interpretive and the product developers to ensure that products meet human as well as mechanical requirements.

The Mechanical Design groups use Graftek CAD systems exclusively for efficient design transfers to an increasingly automated manufacturing process. Because the mechanical design can offer many competitive advantages while minimizing manufacturing risks, the Mechanical Design groups should be involved in your product design from the conceptual stage.

Contact the Mechanical Design groups through your manager.

Photo Lab and Printed Circuit Board Manufacturing
The Photo Lab group takes the electronic information provided by the design team and turns it into a medium from which circuit boards can be printed.

The Printed Circuit Board group at the Kanata lab in Ottawa fabricates printed circuit boards (PCB) to support the BNR and NT design community, and it does this faster, cheaper, and with less difficulty than any other facility can. The shop is capable of providing high quality double-sided, backpanel, and multilayer PCB. Production equipment is continuously updated to provide full in-house fabrication service for new high technology designs.

Model Shops
Shops equipped for wood, plastic and metal model making provide a range of services, from simple on-off assemblies to working prototype models.

Call these shops to discuss specific projects and the degree of documentation required to provide you with a model.

Printed Circuit Pack Shop (PCP)
The Printed Circuit Pack shop (PCP) at the Kanata lab in Ottawa provides many valuable services to BNR circuit and system designers, and in this way contributes significantly to BNR's reputation for design excellence.

The principal services offered by the PCP group include the following:

- manufacturability assessment through prototype and pre-production manufacture, and feedback to the designer to improve the design prior to manufacture
- material management check against an approved and qualified component list to ensure availability and quality of components
- prototype testing using both manual and automatic testbeds for accurate functional and system testing
- quality assurance program providing in-coming, in-process and final assembly quality verification
- provision of a template for the manufacturing process

The PCP group uses manual and computer controlled, semi-automatic assembly stations and continually updates the capability of the process in step with NT. As a result, PCP closely emulates the mass production environments to ensure that designs move easily from the prototype phase into NT production. This also helps to speed up the prototype, preproduction and full production phases.

Components

Component selection can have a serious impact on the downstream cost, yield and performance of a design. The competitive advantage gained by using the latest component must always be weighed against yield, testability, and the cost of stocking another code (which includes vendor qualification, ordering, incoming inspection, shelf space, and burn-in).

Since the trade-offs are volume-sensitive, it is important to recognize that many of our designs have low lifetime volumes–less than 3000 units per year.

If the design justifies a new component, call the Component Management department for assistance in selecting the part.

Application-Specific Integrated Circuits

BNR uses full-custom or semi-custom silicon in products to gain competitive advantage and life-cycle economies. Many applications justify the use of application-specific integrated circuits (IC). The decision to use application-specific IC depends on many factors, two of which are the higher up-front design costs and the longer intervals in design cycle. The advantages over the life of the product are dependent on volume and markets, and can be considerable.

In-house services include full custom IC design, Standard Cell User Designed Silicon (SUDS), and Logic Array Design System (LADS). Call the Semiconductor Design group if you need assistance in making trade-offs, or if you're initiating silicon design.

Electronic Systems Packaging

"Putting it all together" is the role of the Connection, Protection and Packaging Technology group located in Ottawa. Using circuit boards and backplanes, connectors and cables in shelves and cabinets, this group gives physical substance to system and circuit designs. The Outside Plant, Business Connection Systems, Optical Connection Systems and Protection System needed to interconnect components are also developed here.

Electronic systems packaging requires the blending of special skills in EMI control, thermal management, material selection, interconnection and protection technology, and computer-aided simulation and mechanical design. The focus is on developing products that meet today's stringent reliability, manufacturability, and cost targets.

Software Product Design

Increasingly, the key to the success of products in all fields of telecommunications is the responsive development of application software. The leverage in the software production process lies in the design and commissioning phases, rather than in the manufacturing or replication stages. Formal design processes are therefore necessary to ensure correctness of design and product longevity through timely, controlled release updates.

The software process for each product line is managed within the respective development organization. The software development vehicles differ from product to product for historical reasons, and range from small-scale, commercially available microprocessor systems to fully customized, high-volume systems for major product lines such as DMS.

These systems support one or more languages, provide compilation and library services, support generation of test cases, and include captive office facilities for testing.

The key to product quality, especially in larger systems, is control of the process to ensure that releases are of manageable size and that they are issued within intervals short enough to provide meaningful feedback to designers.

Planners of proposed smaller systems should consult personnel experienced in the larger systems such as the DMS-100, the SL-1, or the DPN for advice in deciding how software should be managed and released. Often, programs that begin as small assembler modules evolve quickly to multi-featured packages requiring careful management to ensure competitively acceptable results.

Computing Technology: XMS System

XMS uses state-of-the-art hardware and software technology with features designed to facilitate communications and ensure reliable operation. XMS systems operate either in stand-alone or distributed mode over copper or fiber local area networks. Products developed on the XMS base can therefore offer end-user features with a competitive edge over those of vendors using standard commercial systems, without incurring the cost of the base system.

Distributed computing systems built from XMS workstations are used extensively within BNR as development vehicles for both large and small projects. The Software Development Environment (SDE) provided with the workstations supports compiler, library, editing, vintage, and access control functions.

The Computer Services group provides workstations, SDE software and support for development applications. Contact the Computing Technology group for advice on using XMS technology in products, and for information on how to get equipment for prototypes.

Product Support Information

The Product Support Information group is responsible for designing and producing the user documentation required by BNR for corporate use. This group also produces a significant amount of technical documentation on behalf of Bell Canada and Northern Telecom, particularly where design primeship resides in BNR.

Typical documentation products include user guides, feature documents, system reference manuals, data sheets, on-line information, Northern Telecom Practices, and Bell Canada Practices.

Linguistic services, including French translation, are also provided for technical documents and administrative materials.

Business transactions with the Product Support Information group often require detailed discussions to determine the client's requirements, to provide job estimates, and to establish funding guidelines.

If you need the services of this group, contact the coordinator listed under Technical Documentation in the BNR telephone directory.



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You and BNR

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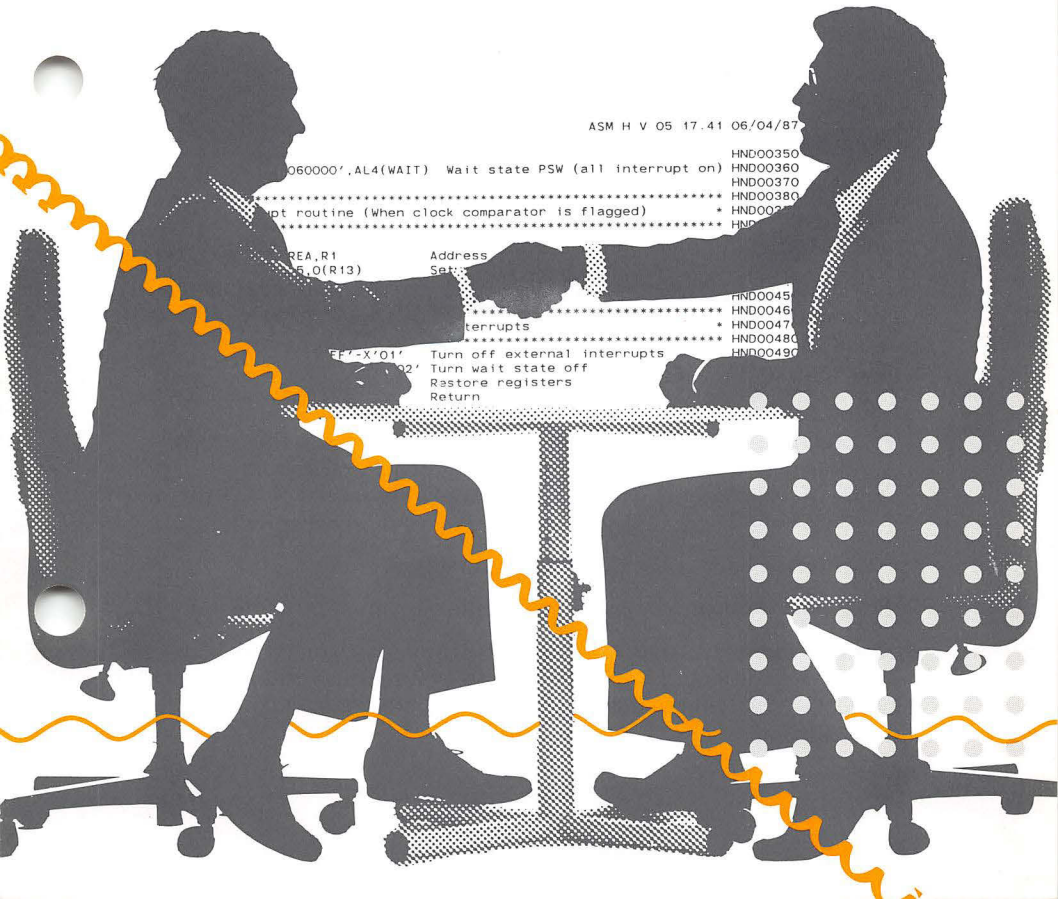
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HND00350
060000',AL4(WAIT) Wait state PSW (all interrupt on) HND00360
HND00370
HND00380
pt routine (When clock comparator is flagged) * HND00
REA,R1 Address
5,0(R13) Set
HND00450
HND00460
terrupts * HND00470
HND00480
EF'-X'01' Turn off external interrupts HND00490
02' Turn wait state off
Restore registers
Return

Corporate Responsibility

BNR strives to attract and retain high caliber people and to provide a creative working environment in keeping with our world-class reputation.

BNR is committed to fair policies regarding compensation, promotion, and career development, taking into account your capabilities and contribution. BNR's salary levels are comparable to those of the research community and other related industries. We make every effort to award promotion strictly on the basis of merit and without favoritism or bias.

BNR has a health and safety policy which is intended to promote your health and safety on its premises. Managers and employees have responsibilities in the implementation of this policy.

In addition, you can expect a genuine concern for you and your family. This concern is reflected in the BNR Benefit Plans, which are intended to provide a base for your personal and family security.

In return, BNR expects that you will bring to your job your best skill and effort, as well as your creative ideas.

Employee Responsibilities

Moonlighting
If you become engaged in external income earning activities, you must inform your manager to obtain appropriate approval.

Such activity must neither interfere with your normal responsibilities and the performance of your regular duties, nor may it involve or use specific knowledge, services, property, and personnel belonging to BNR or its parent companies.

Conflict of Interest
You must not become involved with outside ventures that are in any way inconsistent with your duties at BNR. You should be aware of, and comply with the conflict of interest policy and procedure. There are two categories of conflict of interest activities:

- those activities that are absolutely prohibited
- those activities for which written permission must be obtained

At each Human Resources Review (HRR), your manager will review the conflict of interest policy to ensure that you understand conflict of interest guidelines and that you are not in violation of the guidelines.

Funds and Records

Various Corporate Policies and Procedures outline how you are to handle corporate funds. You must follow these clear guidelines when you have authorization. You should account for expenditures and maintain relevant records. Falsification of records may result in disciplinary action, which could include dismissal.

For information on how to get authorization and how to handle corporate funds, consult your manager.

Corporate Assets and Supplies

You may, on occasion, borrow BNR equipment for your personal use. Make sure you have obtained proper authorization before you remove equipment from BNR premises, and remember that corporate assets and supplies, most particularly BNR computing services, must not be used for personal gain.

Package passes are required to identify items hand-carried off the premises.

Staffing

BNR strives to attract, retain, and develop the best qualified people available to achieve its technical and economic objectives. BNR also ensures that all hiring and promotion practices are free from barriers which could indirectly eliminate any segment of the population.

To that end, BNR is committed to promoting employees from within the company whenever possible. Candidates for any position in BNR are usually considered in the following order: internal, intercompany, and external.



Career Opportunity Posting

Whenever possible, we prefer to fill vacancies from within BNR. A list of openings in BNR and a list of intercompany openings are posted regularly at all BNR locations.

If you're interested in applying for an opening, you should contact your staffing specialist in Human Resources. As well, you should discuss any potential move with your current manager before a formal interview takes place.

Internal Transfers

Information on available positions within BNR, as well as career development options and counseling, is available from the internal staffing specialist in the Staffing department.

Either you or your manager can initiate an internal transfer request. As soon as everyone involved (you, your current manager, and your future manager) agrees with the transfer, all of you will work with the Human Resources staff to make it happen.

If you're interested in information on intercompany transfers (to Northern Telecom or Bell Canada), you should contact the Career Management department or your local HR manager.

Orientation

Whether you're new to BNR or have recently transferred from another location, you'll benefit from our orientation program.

This program, which is conducted regularly at all BNR locations, will give you the opportunity to learn how we function as an organization. Orientation gives you a look at the organization of BNR, details on our comprehensive benefit package, and an introduction to other company programs, such as security procedures.

You'll also meet some people who will be able to answer questions concerning BNR.



Employee Referral

As part of our employment strategy, BNR encourages employees to seek out suitable candidates for the company.

Regular full-time employees, with some exceptions, are eligible to participate in the Employee Referral Award Program. This program provides a cash award to eligible employees for referring to BNR any individual who, as a result of the referral, becomes a regular full-time employee.

However, certain procedural and policy requirements must be met. For instance, referred candidates must usually qualify for technical professional (MSS) or technical managerial positions within the company.

If you would like more information on the Employee Referral Award Program, contact the staffing specialist in the Human Resources department.

Employment of Relatives

BNR does not normally employ relatives in positions with a direct reporting line. This policy acknowledges the potential for security problems when the handling of company proprietary and confidential information is involved. As well, it tries to minimize the difficulties in supervision and morale that can occur.

Each situation in which employees become relatives while on the BNR payroll is handled on an individual basis. Many factors are taken into account, such as the reporting relationships and the position to which each employee is assigned.

Personal File

Everyone at BNR has a personal file which the Human Resources department keeps up-to-date. It contains personal information, such as the benefits you receive, letters of job offer, performance evaluations, salary changes, and so on. You may see this file on request.



Employee Equity

BNR recognizes the dignity and equality of all employees and takes affirmative steps to ensure the application of equal opportunity principles. BNR also promotes an environment free from personal harassment.

BNR's objective is to create a work environment that is characterized by a climate of understanding and mutual respect, in which all employees are equal in dignity and opportunity. This means that you can contribute fully to the successful operation of the organization to the maximum extent of your abilities.

BNR ensures that all terms, conditions, and privileges of employment are applied without regard to race, color, religion, national origin, sex, age, handicap, marital or family status, and veteran status, or any other nondiscriminatory area governed by local legislation.

All supervisory and management personnel are responsible for taking action to prevent the occurrence of discrimination and personal harassment in their work area. As well, they are required, along with the appropriate human resources managers, to take immediate action, if and when an employee complains of such violation of their human rights.

Your local Human Resources department is responsible for ensuring compliance with corporate policy and local requirements.

Employee Profile

Your employee profile is a concise summary of your education, experience, and training.

This information constitutes a segment of the total human resource inventory and is used for human resource planning and other managerial decisions. Information from employee profiles can be used for the initial identification of candidates for staff positions, promotional opportunities, or the reassignment of employees within the corporate structure.

You are responsible for updating your employee profile regularly.

Employee Relocation Assistance

When BNR asks an employee to relocate to another location, relocation expenses will be paid by BNR.

In addition, BNR may offer qualified employees various housing subsidy programs. These are designed to ease the financial burden of moving from one location to another where the cost of housing is higher.

Wherever possible, this assistance is offered to employees as an after-tax benefit.

For more information, contact your local HR department.

Border Crossing

Whenever you're traveling on business for BNR or relocating, it is your responsibility to respect immigration and customs regulations. You must ensure that you have the proper documents for yourself and, if required, for the shipment of any personal or company items, such as PCBs or cameras. If you're relocating to the United States, you must have a B-1 letter or an L-1 visa; if you're moving to Canada from the USA, you need a 2151 visa.

If you need help in determining what documentation you require, contact the Relocation department in Ottawa, your local human resources manager in other locations, or the customs manager in the Purchasing department in Ottawa.

If you receive a job offer that involves a move from Canada to the United States or vice versa, you should make NO personal or financial commitments, such as job resignations by other family members or sale of the family home, until everyone has received their visas.

Resolution of Concerns

You should discuss personal work-related issues with your manager on a regular basis to resolve particular concerns as they arise.

You may also contact your Human Resources manager directly. If you're still not satisfied, document your concern and initiate discussions with senior management through your immediate supervisor.

You may also have a concern that has divisional or company-wide implications. Some examples of such concerns that have already been dealt with are having university courses taught on-site at BNR, border crossing problems, and health and safety issues. Bringing these issues to the attention of your divisional lab council is an effective way of handling them.

Lab Council

Divisional and regional lab councils provide an excellent means of communication between BNR management and employees. If you have an issue that has general implications for the people in your department, division, region, or for the company at large, lab council is the forum where these issues can be addressed.

Lab council also gives you the opportunity to express opinions and make recommendations on matters which will directly affect you, your co-workers, and the effectiveness of BNR.

Your lab council consists of a chairperson, a secretary, divisional/regional lab members who are selected from operating departments on a rotational basis, and a Human Resources representative. Divisional/regional senior management attend your lab council meetings. If you have an issue to raise or if you want to participate in lab council, contact your lab council representative.

You'll find that participation in lab council is an excellent way for you to make contacts more quickly, and "learn the ropes". Most lab councils will give you a choice between representing an operating department or working with an action team on a specific issue.

Central Coordinating Committee (CCC)

The mission of the CCC is to raise, discuss, and resolve issues related to maintaining and improving the human environment and corporate effectiveness of BNR. The CCC provides a direct link between the employees and BNR's top management in any locale where lab councils exist.

The CCC is made up of one member from each lab council who is appointed on a rotational basis. The BNR President and Vice-President, Human Resources and Administration are permanent members of the CCC. A chairperson and secretary of the CCC are also selected by the CCC members. These positions are usually filled by employees who have had experience on a divisional or regional lab council.

The CCC considers issues which affect employees in several divisional or regional lab councils, or which have not been resolved at the lab council level.

Termination of Employment

You're required to give at least two weeks' notice, in writing, if you're planning to resign.

A local human resources representative will conduct an exit interview with you. At this interview, you must sign a Certificate of Compliance in accordance with the policies related to the Invention and Trade Secret Agreement that you signed when you joined BNR.

Your immediate manager must collect your desk and file keys and is responsible for ensuring that you return any BNR property that you've borrowed. You must return any borrowed books and reports to the Information Resource Center in Ottawa or the Learning Resource Center in a regional lab.

You must also settle all your financial accounts with the company and return all company-sponsored credit cards.

The Human Resources department will check with all the appropriate departments to verify that all your responsibilities to the company have been completed. As well, your access to BNR's computers will be canceled.

To get your final paycheck, you must present your ID card at the Human Resources department. This final check will reflect what BNR owes you for time worked, overtime, and any makeup time worked for the period prior to your final working day.

Career Planning

Never has the need to carefully plan your career been more important than now. With BNR's population doubling in size in the past four years it is important that all levels of staff plan their career and consider positions not only at BNR, but also within the corporate family, to ensure a greater awareness of the technology and business.



Through career planning, you can become aware of your career opportunities and choices, fully appreciate the consequences of these choices, and identify career-related goals.

Career planning is a joint effort which involves you, your manager, BNR, Northern Telecom, and Bell Canada. BNR's responsibility is to provide you with the systems, programs and career choices you'll need to grow. But it's your responsibility to take advantage of opportunities and resources, to improve your present performance, and to acquire the additional skills, knowledge, and experience required for your future career advancement.

Career Management

The Career Management department will assist you in developing your career within the corporate family.

To enhance your ability and knowledge base and to gain an understanding of marketing strategies and difficulties faced by customers, consider a move within the corporate family early in your career. The earlier in your career that you consider such a move, the more career opportunities you'll find within the corporate family.

BNR regularly holds Career Forwarding seminars, where line managers from Northern Telecom and Bell Canada are present to inform BNR employees about their location and highlight a few key job openings. You can get information about these Career Forwarding seminars when you log on by typing INQUIRE.

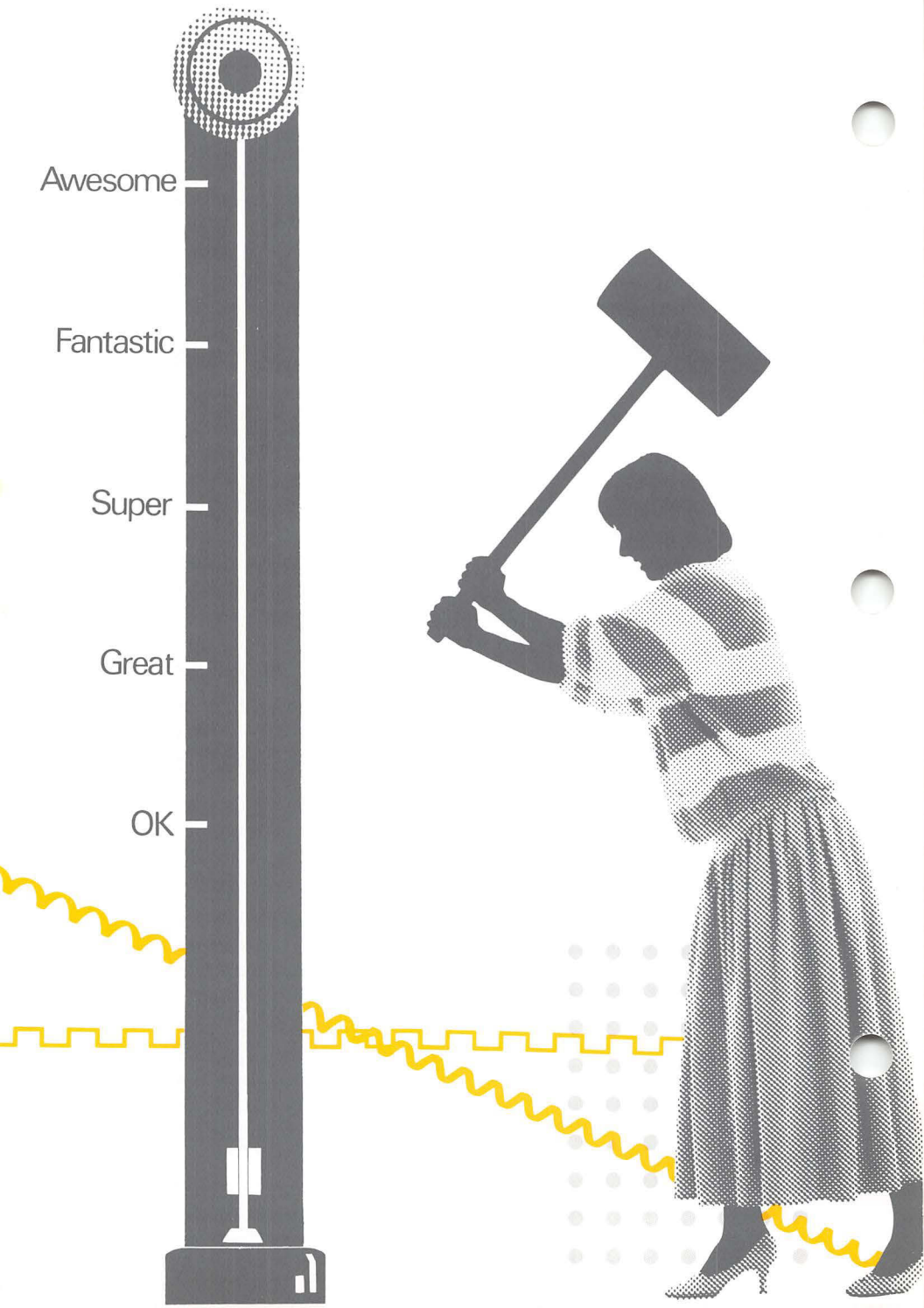
You can get information about the various tri-corporate organizations and available positions from your divisional or local Human Resources manager. This information is also available on-line through the INQUIRE service.

Career Counseling

Career counseling involves discussions between you and your manager, or the local Human Resources representative, during which you can address a variety of career-related issues. You'll get practical advice and guidance in the areas of job progression and career development.

Through career counseling, you can also obtain help in identifying realistic goals and get information on the steps you need to take to achieve those goals. The role of your manager and the Human Resources department is to provide direction, advice and guidance based on a broad knowledge of the organization.

However, your career is ultimately your own responsibility. It is important that you define goals, determine whether these goals are attainable, take time to evaluate the skills and knowledge required to achieve these goals, and set priorities.


Awesome
Fantastic
Super
Great
OK

Early Performance Appraisal (EPA)

The Early Performance Appraisal (EPA) program is designed to provide a basis for communication exchange during the first six months an employee is in a new position. It includes all regular, full-time employees who have been newly hired, promoted or transferred, if their assignment has changed significantly. Your manager should conduct an EPA within three weeks of your joining the group.

The EPA provides:

- a basis for clear communications between you and your manager concerning your new responsibilities and the expected results
- a framework for feedback on your performance during the first six months in a new position
- an opportunity for your manager to identify on-the-job performance that may need improving

Human Resources Review (HRR)

The annual Human Resources Review (HRR) is the formal process for:

- reviewing your performance over the past year
- indicating your career interests
- formulating your development and placement plans
- establishing objectives for the following year

All regular, full-time employees who have been on staff for more than five months are included in this process.

Both you and your manager will receive an HRR form prior to the review date. Complete this form and use it as the basis for your discussions with your manager during the review.

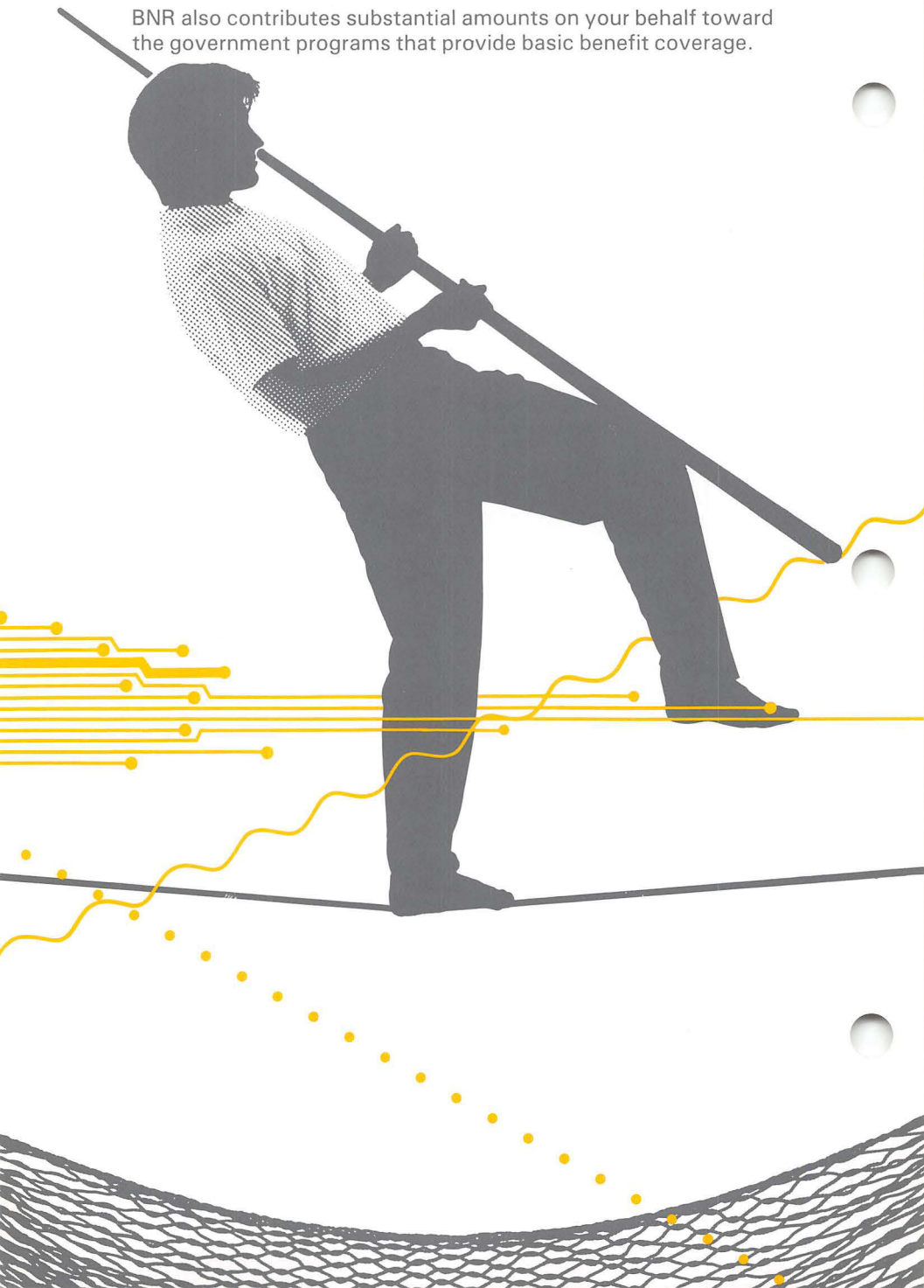
You should also attend the pre-HRR information session given by your local HR manager to help you understand the process better.

Contact your Human Resources department or your local HR manager if you want more information about the Early Performance Appraisal or the Human Resources Review process.

Benefits

As a regular full-time employee, you and your immediate family are protected by a shared-cost benefit program.

BNR also contributes substantial amounts on your behalf toward the government programs that provide basic benefit coverage.



BNR reviews this program regularly to keep it up to date. From time to time, you'll receive bulletins outlining changes in the program. Once a year, you'll get a comprehensive statement of your personal coverage under all the benefit plans.

Your local HR manager or Benefits department will answer any questions you have about benefit coverage.

Here is a brief overview of BNR's benefit program. It outlines what benefits are provided, when you're eligible to participate, and who pays the cost. For more detailed information, contact the Human Resources or Benefits department and ask for the booklet, ''Your Benefits''.

Credit for Service

If you've worked previously for BNR, or for its affiliates Northern Telecom or Bell Canada, you're eligible to receive credit for such service. This eligibility is based on the following criteria:

- If the period of time between reemployment is less than one year, your previous service will be credited to you after a period of continuous employment equivalent to the break in your service.
- If the period of time between reemployment is one year or more, your previous service will be credited after 12 months of reemployment.

To ensure that you receive proper verification of past service, apply to your Human Resources or Benefits department for credit.

Changes in Personal Status

You must inform your Human Resources or Benefits department any time there is a change in your personal status, such as address, telephone number, marital status, number of dependents, and so on. Some of these changes could affect your eligibility for benefits and the handling of claims. As well, this information may be critical in the event of a personal emergency.

Benefit Plan

Health Care Benefits

Who pays * BNR pays
▲ You pay

Program	Details	Eligibility
Provincial Health Insurance *	Covers basic health care expenses, including doctors' fees, surgical procedures, ward hospital accommodation, and emergency outpatient care.	Depends on prior enrollment and the province you live in.
Supplementary Hospital Benefits *	Pays the difference between ward and semiprivate hospital accommodation.	From your first day of work
Extended Health Care *	Pays 100% of most medical expenses not covered by provincial health insurance. Pays 50% of certain other health care expenses with no deductible.	From your first day of work
Dental Care *	Intended to cover 100% of basic dental expenses and 80% of periodontic and endodontic expenses. Intended to cover 50% of major restorative and orthodontic expenses with no deductible. Certain maximums apply. Your dentist's fee schedule will determine your actual costs.	From your first day of work

Disability Benefits

Program	Details	Eligibility
Accident & Sickness *	Pays 70% or 100% of your salary for up to 52 weeks based on your net credited service.	From your first day of work
Long Term *	Ensures 70% of your basic salary if total disability lasts longer than 52 weeks.	From your first day of work

Canada/ Quebec Pension Plan * ▲	Provides a monthly income in case of severe and prolonged disability.	Depends on the length of time you've been in the workforce
Workers Compensation *	Provides a monthly income in the event of a work-related disability.	From the first day of work
Unemployment Insurance Disability * ▲	Provides weekly income in case of sickness during the first 3 months of employment or during maternity leave.	You must qualify through U.I.C. contributions

Survivor Income Benefits

Program	Details	Eligibility
Group Life — Part 1 *	Provides coverage of your basic annual salary rounded to the nearest thousand $.	Upon enrollment, any time after the date you were hired
Group Life — Part 2 ▲	Offers an additional 100%, 200% or 300% of your coverage in Part 1.	Upon enrollment, any time after the date you were hired
Travel Accident Insurance *	Pays a minimum benefit of $100,000 and a maximum of $150,000 if you die while on company business.	From your first day of work
Dependent Life Insurance ▲	Provides payment in the event of death or disability of an eligible spouse or dependent children.	Upon enrollment, any time after the date you were hired
Survivor income ▲	Provides your surviving spouse and dependent children (maximum 2) with a continuing monthly income.	Upon enrollment, any time after the date you were hired
Canada/ Quebec Pension Plan Survivor Income * ▲	Provides continuing monthly income to your surviving spouse and dependent children, plus a lump sum.	
Workers Compensation Survivor Income *	Provides an eligible surviving spouse and dependent children a continuing monthly income, plus a lump sum death benefit.	

Retirement

Program	Details	Eligibility
BNR Pension Plan *	Provides a lifetime monthly income based on the pension formula, years of continuous service, and the average earnings of your best 3 years.	After 10 years of pensionable service
BNR Retirement Transition Benefit *	Provides additional monthly retirement income for up to 44 months.	
BNR Early Retirement Supplement *	Provides additional monthly retirement income payable from the date of your early retirement until you reach age 65.	
Canada/ Quebec Pension Plan * ▲	Pays a monthly retirement income starting as early as age 60 or as late as age 70. Starting this before age 65 provides a reduced pension.	
Old Age Security	Provides monthly retirement income starting at age 65.	All Canadian residents are eligible provided they meet the necessary requirements. Funded from general tax revenue

Savings Plan

Program	Eligibility	Who Pays
Employee Savings Plan (Bell Shares)	All regular full-time employees who have completed at least 6 months of continuous service.	BNR contributes to both plans
Northern Telecom Investment Plan (NT shares or guaranteed income certificates)	Eligibility is immediate.	NT offers various tax deferral vehicles

Payroll Deductions

The following deductions from your pay are obligatory under the law:

- Federal Income Tax
- Provincial Income Tax
- Canada/Quebec Pension Plans
- Unemployment Insurance
- Garnishees (if any)

You can choose to authorize other deductions to suit your requirements. You can authorize that any of the following be deducted from your salary:

- Credit union
- Canada Savings Bonds
- United Way
- Group Life Insurance Premiums (Part 2)
- Survivor Benefit Insurance Premium
- Dependent Life Insurance
- Employee Savings Plan (Bell Canada)
- Northern Telecom Investment Plan
- Deposits to designated banks (under $1000 per pay)
- Direct deposits of total net pay to any financial institution



Salary Policy

It is BNR policy to pay employees competitive rates compared to similar positions in other high technology companies.

The salary program stresses the following:

–*Internal Equity:* The program emphasizes the value of each job relative to other jobs within the organization.

–*External Competition:* BNR must be able to attract and retain highly qualified employees and, therefore, sets rates that are competitive.

–*Personal Motivation to Achieve Goals:* The salary program serves to motivate employees to achieve high levels of contribution by recognizing and rewarding individual effort and contribution.

–*Flexibility to Change:* The salary program and method of classification are responsive to changes within the organization and within the competitive market. All of this is based on job content for both new and existing jobs.

If you want more information concerning the BNR salary program, contact the Salary Administration department. For details concerning your salary range or classification, talk to your manager or your Human Resources manager.

Salary Program

Support Staff (Administrative and Technical)	
Classifications/grades:	Classifications/grades are based on job content and are reviewed as changes occur. Your classification/grade reflects your job's content and the way it relates to other jobs in the company.
Salary Ranges:	Employees in a new job are paid in the hiring or developmental zones, according to the level of experience they bring to the job. Your salary will begin to move toward the midpoint of the salary range as you demonstrate your ability to perform your job at a fully satisfactory level.
6-Month Review:	At the same time that you receive your six-month review or Early Performance Review (EPA), your salary will be reviewed to ensure that your current rate of pay is consistent with your demonstrated performance.

Annual Review:	Salaries in BNR are reviewed annually. Your salary will be adjusted based on your performance level and position within the salary range.
Overtime:	You'll be paid time-and-a-half for any work done after you've worked and been paid for 37 1/2 hours in any work week. For all approved paid overtime hours worked on a Saturday or Sunday, you'll be paid at the equivalent of one and a half times your regular hourly rate. However, if you work more than 7 1/2 hours on a weekend or statutory holiday, you'll be paid double time. Your manager must pre-authorize any overtime you work.
Premium Pay:	If you're required to work offshift in a regular program, BNR will pay you a differential for the hours worked outside of BNR's normal work hours. If your duties require you to remain on standby, you'll be compensated at a flat rate for every eight hours you're required to remain available. If you're called in while on standby, you'll be paid either for a minimum of three hours, or for the time actually worked, whichever is greater. You'll be paid at the applicable overtime rate.

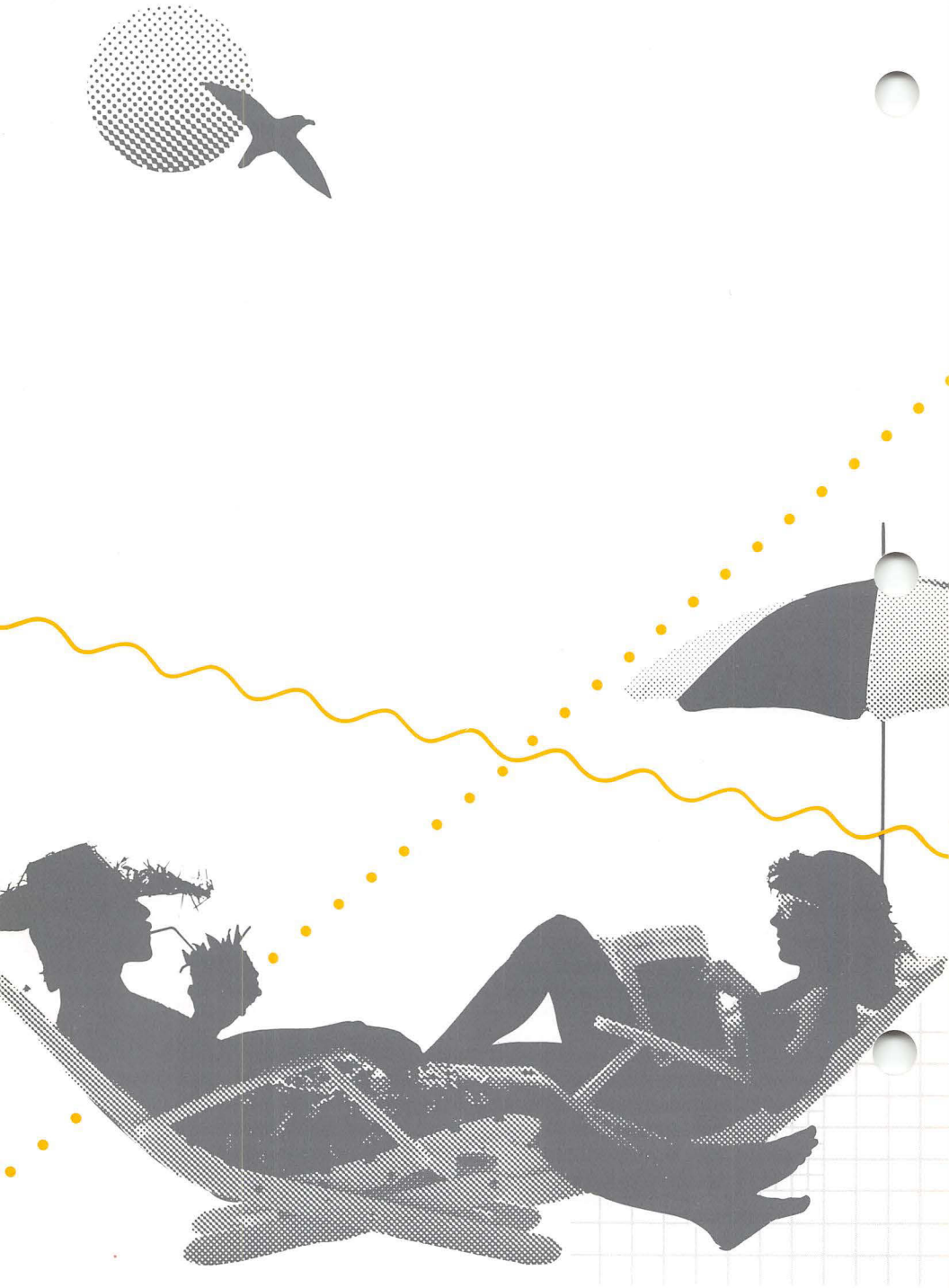
Members of Scientific Staff (MSS), Members of Technological Staff (MTS), and 1st Level Technical Managers

Maturity Curves:	Members of Technological Staff (MTS), Members of Scientific Staff (MSS), and 1st level technical managers are paid relative to maturity curves. These curves reflect BNR's assessment of a competitive salary in the external market. Your salary is based on your technical maturity (Effective Graduation Year) and contribution relative to your peers.
6-Month Review:	At the same time that you receive your six-month review or Early Performance Appraisal (EPA), your salary will be reviewed to ensure that your current rate of pay is consistent with your demonstrated performance.

Annual Merit Review:	Salaries in BNR are reviewed annually. Your personal salary will be adjusted based on your level of contribution when compared to that of your peers.
Overtime–MSS, MTS, and 1st level managers:	You'll be paid the appropriate overtime pay for any overtime you work. Your manager must pre-authorize any overtime you work.
Premium Pay–Technological and Scientific Staff Only:	If you're required to work offshift in a regular program, BNR will pay you a differential for the hours outside BNR's normal work week. If your duties require you to remain on standby, you'll be compensated at a flat rate for every eight hours you're required to remain available. If you're called in while on standby, you'll be paid either for a minimum of three hours, or for the time actually worked, whichever is greater. You'll be paid at the applicable overtime rate. Premium pay does not apply to 1st level managers.
Professional and Management Staff (Grades 3-13)	
Classification/Grade:	Your job has been classified according to its content and its relationship to other jobs in the company as well as to the external job market. Jobs are evaluated using the BNR job evaluation plan which is administered by the Salary Administration department in consultation with the line managers.
Salary Ranges:	Administrative assistants, specialists and administrative managers are paid relative to salary ranges for their jobs. Salary ranges are adjusted annually to reflect market conditions and internal relativity. Your position within the salary range represents the degree to which you are performing on the job.
6-Month Review:	At the same time that you receive your six-month review or Early Performance Appraisal (EPA), your salary will be reviewed to ensure that your current rate of pay is consistent with your demonstrated performance.

Annual Merit Review:	Salaries in BNR are reviewed annually. Your salary will be adjusted based on your performance level and position within the salary range.
Overtime:	You'll be paid time-and-a-half for any work done after you've worked and been paid for 37 1/2 hours in any work week. For all approved paid overtime hours worked on a Saturday or Sunday, you'll be paid at the equivalent of one and a half times your regular hourly rate. However, if you work more than 7 1/2 hours on a weekend or statutory holiday, you'll be paid double time. Your manager must pre-authorize any overtime you work.
Premium Pay:	If you're required to work offshift in a regular program, BNR will pay you a differential for the hours worked outside of BNR's normal work hours. If your duties require you to remain on standby, you'll be compensated at a flat rate for every eight hours you're required to remain available. If you're called in while on standby, you'll be paid either for a minimum of three hours or for the time actually worked, whichever is greater. You'll be paid at the applicable overtime rate. Management is not eligible for premium pay.

Senior Management (Grade 14 and above)	
Classification/Grade:	Your job is classified and graded according to its job content and its relativity to other jobs in the company, NT, and the external job market. Jobs are evaluated using the BNR job evaluation plan which is administered by the Salary Administration department in cooperation with the line managers.
Salary Ranges:	Senior managers are paid relative to salary ranges for their jobs. Salary ranges are adjusted annually to reflect market conditions and internal relativity. Your position within the salary range will represent the degree to which you are performing the job.
6-Month Review:	At the same time that you receive your six-month review or Early Performance Appraisal (EPA), your salary will be reviewed to ensure that your current rate of pay is consistent with your demonstrated performance.
Annual Merit Review:	Salaries in BNR are reviewed annually. Your salary will be adjusted based on your performance level and position within the salary range.
Premium Pay/ Overtime:	Senior managers are not eligible for premiums and overtime pay.



Leave

Leave is part of the benefit package that you earn through your employment with BNR.

BNR Statutory Holidays
BNR provides the following 12 paid statutory holidays each year:

–New Year's Day

–Good Friday

–Victoria Day

–St. Jean Baptiste Day (Quebec employees only)

–Canada Day

–Civic Holiday (Canadian employees working outside Quebec)

–Labor Day

–Thanksgiving Day

–Christmas Day

–Boxing Day

–1/2 day on the last work day before Christmas and New Year's Day

–two floating holidays, usually applied towards Christmas makeup time.

Vacation
As an employee of BNR, you must take a minimum of two weeks' vacation each year when entitled to do so. The amount of vacation you're entitled to each year is determined by your net credited service as of June 30, according to the following schedule:

Length of Service	Annual Vacation
Less than one year	1 1/4 days for each full calendar month of service
One year but less than 10 years	3 weeks
10 years but less than 19 years	4 weeks
19 years but less than 29 years	5 weeks
29 years or more	6 weeks

You may take your annual vacation between January 1 of one year and April 30 of the following year. You may extend the vacation from April 30 to December 31, if you have the prior written consent of your vice-president and approval of the Employee Benefit Committee.

Sick Leave
If you become sick or disabled, you're entitled to sick leave with pay. Sick leave protects your salary while you're unable to work because of illness or accident.

Sick leave comes into effect after seven consecutive days of absence due to sickness or accident. The first seven days are incidental absence so your salary is completely covered by your department. From the eighth day of your absence, the plan will pay either 100% or 70% of your basic salary for up to 52 weeks, depending on your length of service. For more details, refer to your Human Resources manager or the Benefits department.

If your disability continues beyond 52 weeks, you can apply for Long Term Disability. If it is accepted, you'll be paid 70% of your basic salary until you return to work or reach the age of 65, whichever comes first.

If you need to establish your entitlement for sick leave, follow this procedure:

1.Notify your immediate manager during your first half-day of absence, and continue to advise the manager concerning the state of your health, where you can be reached, and the date when you expect to return to work.

2.If you're suffering from a work-related injury or illness, your manager must complete a BNR Accident Report form which is sent to the Health and Safety department. This department must submit a report to Workers Compensation and any other government agency as required.

3.Get medical attention from a qualified doctor. For disabilities lasting longer than five working days, or for any occupational accident, get a BNR Medical Report from your manager. Have your personal physician complete this form and return it to the BNR Medical department.

4.If you are receiving sick leave pay, you must not leave town without the prior written approval of the Employee Benefit Committee. Failure to comply will result in the immediate suspension of your sick leave payments.

5.If it looks as if your disability may extend beyond 52 weeks, you must apply for acceptance on Long Term Disability. Contact your local Human Resources or Benefits department to ensure that you follow the correct process to guarantee no break in your disability income.

Leave of Absence Without Pay
BNR may grant a leave of absence without pay for certain purposes. This type of leave protects continuity of service to qualify for such benefits as a company pension and sickness disability payments, if you return to BNR after your leave expires.

BNR considers a leave of absence a privilege, and, consequently, reviews each request individually on its own merit.

To apply for such a leave, submit a request to your manager who must support your request before it can be considered further.

Leaves of less than four weeks may be approved by your divisional vice-president. Only the Employee Benefit Committee can authorize leave requests beyond four weeks duration. Leaves can be approved up to a maximum of 12 months.

Even if a leave is granted, BNR does not guarantee that the job you had when you left will be available for you when you return, except in the case of the 17-week maternity/adoption leave. In this case, guaranteed reemployment is a legal requirement.

You can apply for the following types of leave:

–*Personal Leave:* Up to a maximum of six months to resolve personal problems, to restore your health through rest, or to work for another company at BNR's request. If you're going to request more than one month, you must present your case, in broad outline, to the Employee Benefit Committee for approval.

–*Educational Leave:* To continue your education, if your proposed studies will benefit your work at BNR. BNR expects you to return to the company after you've finished your studies. You can get approval of educational leave for up to 12 months. Approval beyond the initial 12 months requires a new application to the Employee Benefit Committee before the original leave expires.

–*Maternity/Adoption Leave:* May be requested by any female full-time or part-time employee who has been employed continuously for 12 months and 11 weeks before the expected date of delivery or adoption. You must submit your request for this type of leave to the Employee Benefit Committee for approval. As well, BNR provides a supplemental maternity allowance for eligible employees who've been granted maternity leave. For details, contact your local Human Resources or Benefits department.

Time Off

Time off refers to short periods of discretionary absence from work that are largely personal in nature.

Normally, you should attend to personal matters outside working hours. However, this is not always possible, and a short absence for reasons other than illness may be unavoidable. If you must take some time off inform your manager, who will decide whether the leave request will be paid or unpaid or if the time will be deducted from vacation time you've already earned. In some cases, you'll be asked to make up the time.

Time off may be approved for the following reasons:

–*Personal Compassionate Time Off:* Limited to 3 days with pay if someone in your immediate family has died. You can arrange leave of up to 5 days if you're responsible for funeral arrangements or must travel considerable distance. Such leave is approved at your manager's discretion.

–*Jury Duty or Court Attendance:* If you're called for jury duty or officially subpoenaed as a witness, BNR will pay your regular salary as long as your presence in court is required. If you're on jury duty, you keep the money the court pays you for your time.

–*Election Days:* When working hours conflict with the minimum time allocated to vote (as specified in the various election acts), you may take leave with pay to fulfill your civic responsibilities.

–*Personal Request Time Off:* You may receive approval for time off with pay if you need professional services not normally available outside regular BNR working hours. Your manager may ask you to make up the time lost.


BNF

Goals and Objectives

Technical Sales Support and Public Relations (TSS&PR) manages and coordinates BNR's communications strategy and activities. The department provides key audiences with information on our technological achievements and their contribution to Northern Telecom's products and markets.

Working with senior executives and the line organizations, TSS&PR identifies and develops strategic messages for internal and external groups. These include the following activities:

- gathering information
- producing publications, speeches, and presentations
- monitoring the impact of these messages
- providing feedback to senior management
- securing approvals for conference papers and journal articles
- organizing and conducting customer visits to BNR
- administering the employee awards program

An important objective of TSS&PR is to communicate to pre-selected outside audiences exactly what BNR is all about: what BNR has already achieved, what is presently being achieved, what the corporate goals are, and how the company plans to achieve those goals.

As well, TSS&PR helps BNR employees to understand and to share in the common goal. The department provides the means to bring about positive cultural evolution within all the labs in all the regions by making relevant information readily available. This department acts as a facilitator and coaching agency to ensure that BNR presenters are fully equipped for successful events and presentations. As well, TSS&PR strives to inspire and reward employees by publicly recognizing their accomplishments and contributions.

Internal Communications

TSS&PR provides you with relevant and timely details on the company's progress and goals, through a variety of information sessions and publications.

Meetings Program
TSS&PR coordinates a program of meetings to share information between you and senior management. One example of such a meeting is the annual State-of-the-Business address where the president of BNR presents an overview of recent accomplishments and an outline of future objectives and priorities.

Insight
''Insight'', BNR's internal news magazine, presents information on all aspects of the company's activities and interests. ''Insight'' stories highlight the achievements of various BNR groups, describe the programs and support services available to employees, and explain the challenges that define the company's future direction.

Management Focus
Specifically designed for BNR managers, ''Management Focus'' emphasizes strategic and developing issues, such as effective management techniques, new developments in organizational structure, and the company's long-range objectives. One of the subjects covered is the continuing issue of managing technology in a cost-effective and timely way to ensure the highest possible quality.

External Communications

TSS&PR arranges communications programs for general audiences, technical experts, and the media, in North America and around the world. These are designed to convey a positive image of BNR as a world-class technological leader, a desirable employer, and a good corporate citizen.

Media Relations
Because of the sensitive nature of BNR's work, TSS&PR is responsible for the company's relations with the media. The Manager of News Services sets up interviews, issues technology news releases, and provides background materials and briefings.

To ensure that information leaving BNR is not proprietary and that it is consistent with the company's policies and procedures, all requests for information and interviews are channeled through this office. If you're approached by anyone for information, refer them to the Manager of News Services.

Executive Speeches
TSS&PR is responsible for the preparation of all speeches and presentations made by BNR's senior executives.

Community Relations
BNR and Northern Telecom get involved in those communities where they have facilities. Through a corporate contributions program, NT supports educational, social service, cultural and other organizations. BNR is represented on this committee.

TSS&PR assesses, with senior management, all solicitations from charitable and other organizations and responds appropriately. One of our key programs is BNR's active support of local United Way campaigns.

Special Events
TSS&PR is responsible for organizing and coordinating such special events as lab openings, anniversary celebrations and open houses. These familiarize the community with the work done at BNR, and create a positive public image of the company.

Technical Communications

Telesis
Telesis, BNR's flagship publication, highlights BNR's technical achievements in telecommunications and integrated office products. It is distributed world wide to NT customers, major business executives, academics and government officials, as well as to all BNR scientific and technical personnel.

If you haven't received your copy of *Telesis*, contact the *Telesis* editorial staff. Copies are also available for your use at your local Information or Learning Resource Center.

If you are a BNR scientist or engineer, you are encouraged to submit articles or ideas for articles, based on your work and its application, to the *Telesis* editor.

Papers Placement and Presentation Assistance
Technical papers by BNR staff play an important role in communicating the company's achievements and expertise. However, to ensure that sensitive or proprietary information is protected, TSS&PR is responsible for approving material for publication and presentation outside the company.

TSS&PR will help you place your articles in the appropriate trade publications and technical journals.

As well, TSS&PR personnel coordinate dry runs to review and polish presentations. If you're making a presentation at a major conference or symposium, contact them for any help you may need, especially if you're trying to transform written material into an effective presentation. They also maintain a large library of slides where you can find relevant material.

Customer Visits

Every year in Ottawa, TSS&PR plays host to more than 200 visits by current and potential customers, including top corporate executives and government officials.

These visits frequently include presentations, displays, demonstrations, and tours to help visitors understand BNR and its technologies. TSS&PR maintains for this purpose a display and demonstration room, and a conference center.

Employee Recognition

There are many ways in which BNR recognizes your exceptional contribution to the company. This section describes the various Employee Recognition programs provided by BNR.



Project Recognition

BNR recognizes that the talents, efforts, and commitment of its staff to the successful completion of their projects is vital to the company's reputation for excellence. We encourage line managers to recognize individuals and teams for their contribution to BNR, and to celebrate the success of team achievements.

Patents

BNR recognizes the granting of patents annually at the Award of Excellence dinner. Each patent recipient receives a framed Award of Excellence certificate.

Telesis Authors

Telesis authors are recognized at an event that can vary from a banquet with a widely acclaimed guest speaker to a dinner dance.

Service Recognition

Service Recognition starts on your first day with BNR, when you receive a sterling silver pin with the company name and logo.

On every five-year anniversary of your starting date at BNR, you'll receive a 14K gold service pin as a symbol of your contribution to BNR. BNR believes that it is important to recognize individual contributions to our success, and to take the opportunity to emphasize our continuing directions and contributions to the BNR mission.

Achievement Awards Program

The Achievement Awards Program exists at BNR's labs to recognize outstanding employee contributions. You can be nominated for an achievement award if you have clearly demonstrated a level of work excellence beyond your normal job requirements.

These awards are given annually and there are a number of categories for which you can be nominated.

BNR's product is information, whether it's a market research document, a piece of computer code, or an integrated circuit (IC) design. The quality of a product depends directly on the quality and depth of the information available to BNR personnel, and the extent to which this information is current.



Information services and specialists are available to you in the resource centers at each BNR location. These centers are designed to add to your productivity and effectiveness by providing you with the most up-to-date information you need for application to your specific tasks.

You'll find the Information Resource Centers in Ottawa and in Montreal; in other regional labs, you have access to your Learning Resource Center which, in addition to providing information services, performs training and education functions as well as having a training specialist on staff. These resource centers are jointly referred to as I/LRC.

A description of the four major service areas follows.

Information Retrieval Services

Using on-line and print sources, as well as network and tricorporate contacts, I/LRC information specialists can provide factual answers to your questions, and comprehensive literature reviews to support your specific BNR projects.

The subject areas covered are as broad in scope as BNR itself. Examples include technical topics such as the latest literature on optical switching, human factors topics such as the impact of color CRT displays, and market queries such as the installed base of PBX lines.

Current Awareness Services

The world is generating information at a formidable rate. The I/LRC provide updating services designed to help you keep current in your area of expertise and project application.

They issue regular bulletins to announce articles in journal issues that have just arrived, and inform you of recent book and standard acquisitions. These bulletins vary somewhat in name, form, and frequency from region to region. Two daily COrporate COmmunications Systems (COCOS) services provide up-to-the-minute details on the latest events in the ever-changing telecommunications market and regulatory worlds.

Document Delivery Services

The regional BNR I/LRC work together as a network to share resources and expertise. This means two things for you:

1. additional specialist assistance for information retrieval and current awareness services

2.availability of the entire resources of the BNR information network

If the book or journal article that you want is not available at your particular location, it may be located at another I/LRC and forwarded to you.

Beyond that, the I/LRC also have access to Bell Canada and Northern Telecom resources and can request an interlibrary loan for you from almost any library in the world.

Your department may require its own copy of a book or journal. If this is the case, your local I/LRC can assist you in purchasing material because it already has all the vendor and publisher contacts.

Proprietary Information Services

BNR is continually producing new information, frequently in the form of printed documents. These may be major business or technical documents associated with a particular project.

Once such a document has been distributed, the I/LRC has the responsibility for its subsequent distribution. This is to ensure that work that has been produced within BNR is used effectively, that communication of technical information among the regional labs is facilitated, and that the security of proprietary information is maintained.

These responsibilities include:

–maintaining a collection of BNR documents

–indexing and recording each document in a database

–controlling access to the documents following their initial distribution (according to BNR corporate procedures)

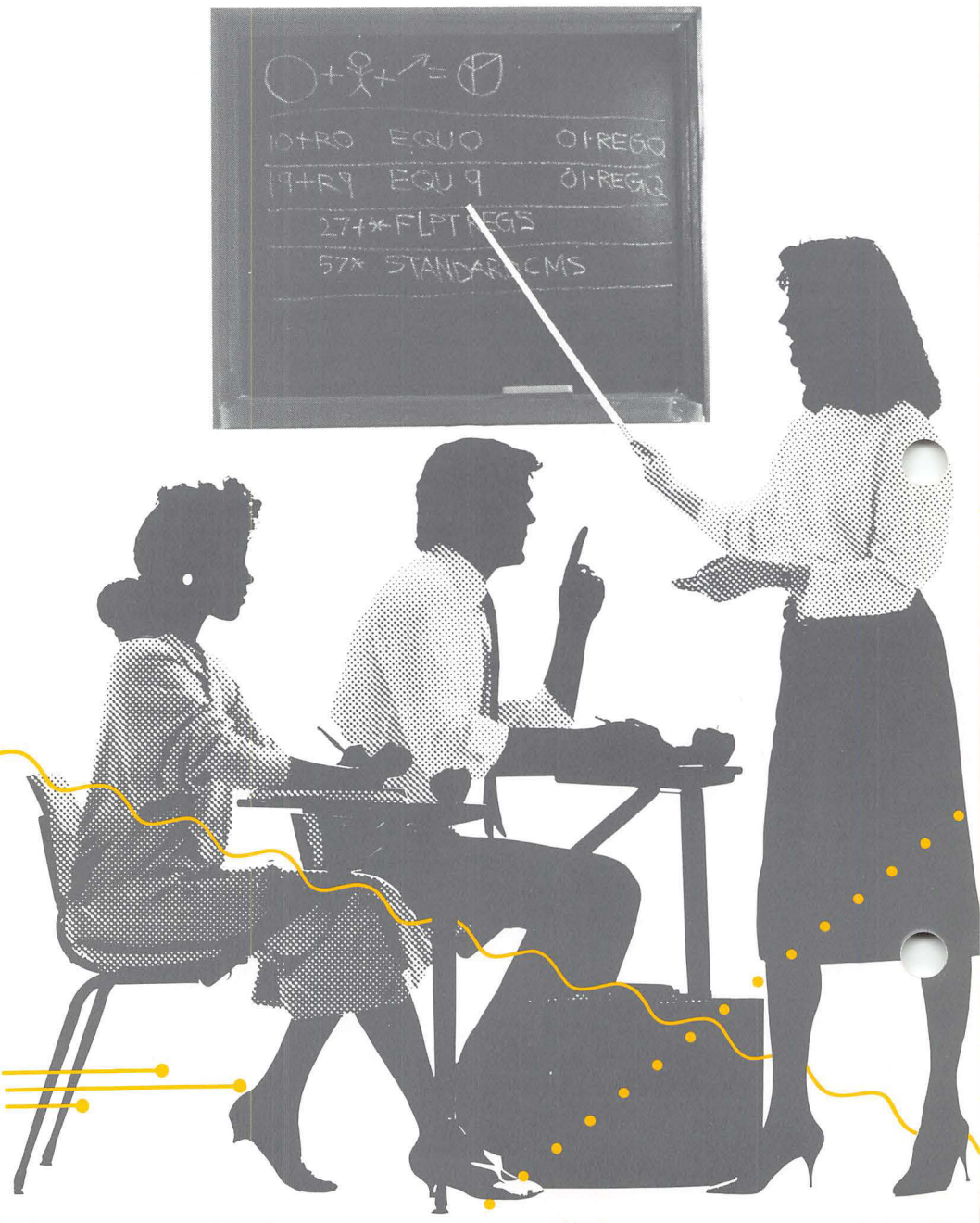
–assisting BNR personnel in the numbering, formatting and creation of locally produced documents

–retrieving relevant BNR documents for use in current projects

There are a number of categories for these I/LRC controlled documents: Technical Letters, Technical Reports, System Requirements, Position Papers, and Business Prospecti. For your purposes, the most common are the Technical Letters and the Technical Reports.

Technical Letters: Technical Letters are documents which provide technical information on a project, study, system, technology or research activity. Technical Letters deal with information expected to have limited strategic significance and localized and minor impact. They are usually of a noncontroversial nature.

Technical Reports: Technical Reports are documents similar to Technical Letters, but they contain more substantial business and technical information.


10+R9 EQU 9 01REG9
19+R9 EQU 9 01REG9
27+* FLPT REGS
57* STANDARD CMS

Philosophy

There are three crucial areas to consider when planning your professional training and education.

1.Learning to use the appropriate BNR tools and processes is an important part of your preparation when beginning a new project. You must have access to the courses and documentation that will enable you to master as quickly as possible the skills and knowledge you need for your job.

2.Technical knowledge has a half life of about five years. BNR expects you to remain current in your professional field by keeping abreast of the rapidly changing technology.

3.You'll be expected to broaden your understanding of the telecommunications business to include aspects of manufacturing, marketing, and user support that may relate to your work.

Initially, your manager will help you plan a set of courses and provide access to suitable documentation to aid you in mastering the skills and knowledge you require to do your job well. Subsequently your career discussions with your manager should always include a plan of formal learning activities tailored to your needs and interests, and structured to expand your knowledge base.

BNR supports the concept of life-long learning.

Internal Training

The BNR Training and Education department in Ottawa, or the regional training specialist associated with your Learning Resource Center (LRC) at your regional lab, works with all managers to analyze the training needs of the people in their departments. Together, these groups develop appropriate sequences of training and documentation to create an effective learning environment.

The Training and Education department in Ottawa and the LRC in the regions consult together on the development of BNR courses and seminars, organize and evaluate programs given by tricorporate and external professionals, and manage seminars delivered by teleconference.

Many of BNR's internal training and education courses and seminars are developed and presented by line division experts. Some are produced on videotape, using these experts, in BNR's own television studio. Other video courses are rented or purchased as needed. You can view all videotapes by making arrangements with the Training and Education department or the Information Resource Center in Ottawa, or the LRC in your region.

To help you find out about BNR training and education programs of all kinds, we provide an on-line information system available on all company computers. By typing INQUIRE COURSES, you can get information concerning schedules, cost, titles, and detailed descriptions for most courses. For your convenience, this information is updated regularly. Training and education programs are organized under the following headings:

- Telecommunications
- Computing/Computer Technology
- Business Education
- Design Tools and Processes
- DMS courses
- DMS-NT Education & Training
- Health, Safety and Medical
- Office Productivity
- Personal Skills and Development
- Quality Improvement
- Meridian SL-1

Your local Learning Resource Center may advertise other courses that are offered only at your site.

External Education

Northern Telecom Programs
Northern Telecom's programs are available to BNR employees, and are similar in format and content to ours. You can get information on these courses from the training specialist in the Training and Education department in Ottawa, or from the LRC in a regional lab.

Bell Canada Training Programs
Bell Canada training programs are available to BNR employees as well. You can get information on these courses from your training specialist.

Attending relevant NT and Bell Canada courses is an excellent way to get to know our customers better.

Seminars and Conferences
As part of your specific development plan, you may be asked to attend certain seminars or conferences.

When you return, you'll be asked to submit a brief report to your manager, highlighting new insights that you've gained, the appropriateness of the material studied, and the overall quality of the seminar or conference.

Occasionally, you may be asked to present a paper at a conference. Before you accept the invitation, make sure you review the request with your manager and the Technical Sales Support and Public Relations department. This department will approve the invitation and provide editorial support to you in preparing your presentation.

Education Updating and Tuition Refund

Technology, business, and competition change rapidly. Therefore, it is essential that all of us maintain our professional standards and update our knowledge in our specific field of interest. BNR supports you in this effort. The tuition refund program covers the tuition fees and cost of books for approved courses taken in a recognized learning institution.

If you want more detailed information on this program, contact your local training specialist.

University Interaction

BNR cultivates interaction with various universities through a series of programs for three major reasons:

1. To enable selected professors and universities help us do a better job.

2. To provide BNR with access to the best sources of people and knowledge so we can meet the ever-changing needs of our industry.

3. To increase the strength and broaden the capabilities of selected educational programs and institutions.



The following areas outline the scope of BNR's university interaction program.

Joint Research Programs

BNR supports research in universities when the work is of specific interest to BNR, and a BNR scientist or engineer wants to work with the university professor concerned. In some cases, a post-graduate student from the university may do the work on BNR premises using BNR equipment.

Faculty Development

BNR encourages key universities to establish new faculty positions and to build research expertise in strategic technology areas. In some cases, BNR, in partnership with the university, funds new faculty positions for up to five years.

Visiting Professors

BNR occasionally invites selected university faculty to spend a sabbatical at BNR working on research projects of interest to both BNR and the university.

BNR Staff Teaching at Universities

BNR encourages and supports outstanding BNR staff to undertake teaching assignments at universities as adjunct professors, or as temporary, full-time staff, for up to one academic year.

Post-Graduate Award Program

Each year a number of qualified BNR employees who apply for acceptance to a post-graduate program receive assistance through the post-graduate award program. If you're interested in this program, you can get details from your local Human Resources department.

Summer/Co-op Student Program

BNR hires selected students to work on various R&D projects or in such areas as finance and human resources during the summer. As well, students may be hired for semester-long work terms which are outlined in the curriculum of the co-op institutions where they're studying.

Equipment Donations

BNR donates surplus scientific equipment to various teaching institutions as part of an ongoing program to assist educational institutions. The donated equipment reduces demands on institutional budgets and helps provide the tools to support the training of professionals with a view to the future needs of the telecommunications industry.



Information Systems (IS)

The Information Systems department provides you with user support and services to help make your job easier and more efficient. The responsibilities of this department include the following activities:

- IS plans for, provides, and maintains efficient computing and communications tools for all BNR Ottawa divisions. These tools include mainframe and personal computers (PC), teleconferencing, electronic mail, telephone systems, and data network control. IS also provides and maintains the supporting hardware, software, and languages for these services.
- IS supports database applications, service planning, online help, personal consulting, and the introduction and in-house testing of new products developed by BNR and NT.
- The IS Customer Services group provides consultation services to mainframe and PC users, on-line help and information, the creation and maintenance of mainframe userIDs, and the distribution of computer manuals.
- The IS Computer Systems group is responsible for providing and maintaining all hardware and software mainframe computing resources for BNR Ottawa, as well as acting as a liaison and support group for other BNR labs.
- The IS Telecommunications Operations and Services groups are responsible for all voice and data communications for BNR Ottawa. They also coordinate the installation and operation of voice and data communications services to all NT and BNR sites in North America.

Electronic Mail

The COrporate COmmunications System (COCOS) is an electronic mail system developed by BNR to run on all BNR mainframe computers.

You can use COCOS to exchange messages and memos with other BNR employees and with some NT and Bell Canada employees.

To use COCOS you must be registered and have a userID on a BNR mainframe computer. If you want to be registered on COCOS, contact the Directory Administrator. If you want to receive just a printed copy of your COCOS mail, you only need to be registered in the BNR telephone directory.

You can get manuals on the use of COCOS from the Computer Librarian.

Electronic Switched Network (ESN)

The ESN provides long-distance telecommunications routing at the lowest cost to BNR. The ESN is used from all BNR Ottawa sites to route business calls to all non-overseas destinations, whether BNR or NT has a facility there or not.

If you're making a long distance business call, make sure that you use the ESN access code 6 to ensure that BNR pays the lowest possible charge for the call.

If you're calling a BNR or NT site, dial 6, the appropriate ESN location code, such as 366 for the Carling lab, then the extension number. To reach a location without an ESN location code, dial 6, the area code, then the 7-digit number.

You'll find complete dialing instructions, as well as a list of the ESN location codes for all BNR and NT sites, in the front of the BNR telephone directory.

You may not charge personal calls to BNR. Personal long-distance calls should be made through the operator and charged to your home phone number.

If you have any questions or difficulties, dial 0 and a BNR operator will help you.

Data Links

The various BNR and Northern Telecom computers are linked through dedicated, high quality data lines. These let you transmit information easily and quickly.

There are various software packages that come into play when information processing takes place between locations. Documents that give specific details on equipment, software, types of data links, and locations of computers are available for the more technically minded user. You can get this information through the on-line INFORM system.

Identical documentation is provided on all mainframe computers so you can get information about remote locations as well as about your local computer.

Teleconferencing

Corporate teleconference rooms are located throughout BNR and are popular with all employees. These rooms are equipped with dedicated audio systems and can be connected individually or in groups to any other BNR teleconference room, or to the outside world.

Various video and visual communications aids are available to enhance the teleconference environment.

You can reserve a teleconference room by calling the telephone number listed under Teleconferencing at the back of your BNR telephone directory.

Communications Service—Installation and Repairs

If you need to have telephones or terminals installed, moved, or repaired, contact the Communications department. You'll find the number in your BNR telephone directory under Communications Services.

The Business Systems department develops, supports, and operates the initial administrative, financial and management systems of the company. The key areas of emphasis are on financial systems development, data administration, and office systems.

Support Services

BNR provides in-house services designed to help you carry out the company's business and do your job efficiently.



Video Productions

BNR has an in-house video production studio which is responsible for the production of public relations, marketing, and product-related video programs, with an emphasis on training, education, and developmental topics.

For more information, contact the Video Production department or cocos VIDEO.

Documentation Production

Graphics & Illustrating

Graphics & Illustrating is responsible for the design, format planning, and production of most BNR publications, including brochures, reports, manuals, documents, stationery, and forms. This department also produces visual aids, such as slides, vugraphs, displays, and posters.

If you want more information, call the number listed for the Illustrating department (Graphics) in the BNR telephone directory.

Photography

The Photography department handles studio and on-location assignments involving marketing, promotional, or technical documentation photography. Photography personnel can provide you with optical and special effects slides, duplicate slides, black and white prints, and color prints. If you need any unique photography services, they will help you coordinate them.

To discuss your photography needs, look for the Photography department in your BNR telephone directory.

Reproduction and Printing

The Reproduction department provides printing and copying services. It can produce documents, stationery, books, forms, posters, and newsletters from camera-ready masters (CRM), whether the CRM have been produced by the Graphics & Illustrating group or provided by you in the form of typewritten or computer-printed originals.

As well, Reproduction provides a complete binding service including collating, folding, stapling, drilling, padding, and cerlox binding.

If you want to use this service, call the number listed in the BNR telephone directory under Reproduction.

Vault Services
This service provides a secure storage for master engineering drawings. You can get copies of the drawings simply by requesting them. The service is equipped to provide copies from oversize (non-standard) originals on either paper or mylar.

If you want to use this service, look in the BNR telephone directory under Vault Services.

Clerical Support
The Clerical Support department can provide you with temporary clerical and secretarial staff for short-term assignments. All staff are trained in BNR methods and procedures and many are skilled at using various BNR computer systems.

This department is listed in the BNR telephone directory under Clerical Support.

Copier Service
You'll find a photocopier at all locations for the convenience of all BNR employees. The capabilities and features of the machines vary to suit the needs of the users at the individual locations.

You can print up to 20 copies on a local copier. If you need more copies take the job to the Reproduction department.

A phone number is listed with each photocopier. Call this number if the machine you're using requires repair.

Mailroom Services

Facsimile
Facsimile machines are located in all BNR mailrooms. The facsimile lets you transmit and receive an exact copy of a document to and from any compatible facsimile network worldwide.

Whenever you send or receive a facsimile, the mailrooom will notify you in writing as soon as possible that a facsimile has either been sent or received for you.

If you want to send a facsimile, contact your local mailroom.

TWX and Telex
TWX machines are located in most BNR mailrooms and are used to transmit text material only. You can TWX messages to any Canadian or American company within the network.

Telex service is available from the Carling mailroom. You can telex messages both nationally and internationally to any location with a teleprinter connected to the telex network.

To send a TWX or Telex message, contact your local mailroom. You'll need to provide a copy of the message as well as the destination address. The mailroom staff will then send your message and confirm for you in writing that the message was sent.

Mail

You can send mail to all BNR departments as well as to Northern Telecom and Bell Canada through the internal mail system. Internal mail will reach its destination within 24 hours.

External mail is sent through Canada Post. There is one mail pick-up and one mail delivery to and from the post office each day. If you're sending personal mail through the BNR mailroom, make sure you have the correct postage on your letters.

Bulletin Boards

BNR provides two means of displaying information that is of general interest to all employees. The company provides bulletin boards in common areas throughout all BNR locations. If you want to put a notice on the bulletin boards, forward it to your local mailroom for posting.

You can get information from the on-line bulletin board, INQUIRE, through the BNR computer system. For more information, contact the INQUIRE coordinator.

You'll find notices concerning career openings, social club activities, training courses, company benefits, policies and procedures, as well as news and employee issues posted on bulletin boards and listed on INQUIRE.

Articles for Sale

You can display information concerning articles for sale on the bulletin boards throughout BNR, or at one specific location. All postings are for a one-week period and are removed every Friday unless stated otherwise.

To post notices of articles for sale, contact your local mailroom staff.

Interbuilding Transportation

Regular interbuilding passenger service is available in Ottawa. Schedules are posted at various entrances and are also available from the mailroom.

Conference Rooms

Conference rooms of various sizes and with a variety of features are available for your use. If you want to book a conference room, contact the Conference Reservation Service listed in the BNR telephone directory.

Purchasing

The Purchasing department has complete responsibility for the purchase of equipment, supplies, and services for company use. The Purchasing department negotiates with the various suppliers for requested goods and services and selects an appropriate supplier.

If you need to purchase something, consult your manager.

The details on purchasing procedures are outlined in the Purchasing Manual, available from the Purchasing department. All new employees receive a copy of the manual when they attend the Overview program, which usually occurs when you've worked at BNR for approximately three months. You can request a copy of the Purchasing Manual from the Manager of Buyers who is listed in the BNR telephone directory under Purchasing.

As well, a complete list of buyer portfolios and Low Dollar Value Purchases is available on-line in INQUIRE.

Shipping and Receiving

Any item you need to ship by commercial carrier is handled for you by the Shipping department. Shipping packs the item and prepares the appropriate documents and shipping labels.

The Receiving department handles all incoming shipments ordered from various suppliers. Receiving staff checks quantity and the condition of the shipment and forwards the appropriate receiving reports to the originator, Accounts Payable, and Purchasing.

This department delivers items to you, and handles all claims arising from discrepancies.

Stockrooms

When you need frequently used items for office, business, facilities, or components, you should check your local stockroom (if there is one in your building). You can get stationery and stock catalogs in the stockrooms. The catalogs include all the items carried in stock and are updated monthly.

If you want to take something out of the stockroom, you have to fill in the appropriate form. Contact the stockroom staff for information or help.

Facilities

The Facilities staff at BNR provides services that house people and projects in eight cities around the world. These facilities consist of 1.6 million square feet of work space in 17 buildings.

BNR is growing rapidly. To manage the existing facilities and provide timely design and construction services to meet research and development program requirements, we have developed a Facilities organization made up of the following elements.



Core Facilities

The Core Facilities team provides BNR with long-term facilities planning which responds directly to the company's business plan.

This team is also responsible for the development of company-wide guidelines for planning, space allocation, workstation design, and for the initiation of corporate projects such as new buildings.

Contact the Facilities department if you have any questions regarding these activities.

Regional Facilities

Each regional Facilities team is designed to provide project services and building operations and maintenance. Depending on the size and nature of the lab, the team may range from one to two people to a larger team of multidisciplinary Facilities management professionals.

BNR Ottawa Facilities

BNR Ottawa Facilities is organized to provide a full range of services. On staff, they have architects, interior designers and planners. Engineers, project managers, and property management personnel work to meet divisional project requirements, and to help maintain the existing facilities.

Each division names a Facilities representative who is responsible for collecting, analyzing, and communicating your needs to Facilities.

The Facilities team will work with your divisional representative to develop a plan and a schedule that can meet the needs of an individual or a group, whether it is a single workstation adjustment or a move of hundreds of people. To do the job right, they depend on timely and useful input from your divisional representative.

It's important for you, and for the Facilities team, that you get to know your divisional representative. Ask your manager for the name and phone number of your division Facilities representative.

Parking Facilities

Wherever possible, BNR provides you with free parking. However, you must not park on access roads or in restricted areas. As well, you must observe all posted regulations regarding speed, fire lane, and parking privileges such as handicap parking.

We encourage you to register your car license with the security personnel. If they have your car license, they will notify you if you've left your parking lights on, or if there is an emergency concerning your car. Registration forms are available at any security desk.

This section contains general information concerning security at BNR. If you want more detailed information, you can get a copy of the Information Security Handbook from the stockroom.

At BNR, security is extremely important and is considered to be everybody's responsibility. The protection of the information and knowledge that constitute BNR's assets is vital to the competitive strength of BNR and its parent companies. Consequently, every employee is urged to report improper behavior to the Security department.



Access to Buildings

All employees receive an ID badge when they start to work at BNR. These badges are renewed at regular intervals.

If you're a regular, full-time employee your badge displays your photograph on a purple background, with your name, employee number, and expiry date. This badge allows you access to BNR facilities at all times, except those areas designated "limited access". You're also permitted to sign in, and escort, visitors to BNR.

However, you must sign in and out during off-peak hours, on weekends and on holidays, regardless of identification.

You must wear your badge while at work. To make sure it can be readily seen, wear it on the outside of your clothing above the waist. If it is stolen or lost, report it immediately to the Security department. Your ID badge must be replaced within 3 days. Arrange for a replacement through your local Security department.

If you lose or forget your badge, you can get a daily badge, which has a green background, by presenting proper identification to security desk personnel. When wearing this badge, you'll be asked to sign in and out at all times and to leave the badge at the security desk whenever you leave the building.

The green badge is also issued to Bell Canada and Northern Telecom employees who visit BNR only on occasion. It is also issued to people affiliated with BNR who have forgotten their BNR badge.

Bell Canada and Northern Telecom employees who work regularly at BNR locations wear a badge with a yellow background. This badge has the same information and guarantees the same privileges as the purple badge issued to regular, full-time BNR employees.

Badges with red backgrounds identify temporary employees, contractors and visitors, and allow them limited access to BNR facilities and limited privileges.

Lost and Found

You should report the loss of an item to any security desk. You'll be asked to fill in a form describing the lost item and indicating how you can be reached.

If you find an item that appears to have been lost, turn it in at any security desk. You'll be asked to fill out a form describing the found item and identifying you as the person who found it.

These forms are routed to a coordinator who will match a found item with an individual who has reported losing it. If matching isn't possible, the coordinator prepares a notice to be placed on bulletin boards throughout local BNR sites.

All suspected thefts should be reported to the Security department.

Movement of Property

Whenever you leave a BNR building with a parcel or equipment, whether it is personally owned or company property, you will require the appropriate forms. These forms must be signed by your manager and given to security desk personnel before you take the material off-site.

Protection of BNR Property

BNR is adequately protected under a blanket bond which insures the company against theft of money or property by its staff.

However, you are still personally liable should you commit a crime against the property of any BNR personnel.

Computer Security

You'll need a computer user identification name or number and a password to use the BNR computer.

Fill in a UserID Request form, on which you identify yourself and specify your storage requirements and the account numbers against which your computer use will be charged. After proper authorization, you'll be issued your userID and given a start-up password.

BNR requires that you change your password every 45 days, without repeating any of your past five sequential passwords.

PINs

BNR will install a terminal in your home if need is indicated. All Ottawa computers are equipped with an SL-100 feature called Direct Inward System Access (DISA) which limits access to the computer from outside to those callers who correctly identify themselves.

To identify yourself, you must have a 7-digit number, called a Personal Identification Number (PIN) or Authorization Code, and you'll be responsible for its use. You can get a PIN request form on-line, by typing INFORM PINREQ.

Visitors

You are welcome to invite your family and friends to see your workplace. Visits of one or two persons do not require prior approval. However, visitors must wear the red visitor's badge and must be escorted at all times while on BNR premises.

If you bring a child into BNR, you must sign a waiver form at the security desk. This waiver absolves BNR of responsibility for the child's welfare.

To arrange for a group visit, send a memo to your manager requesting approval of the visit. State the day, approximate time, the names of the visitors and the area to be toured. A copy of this memo is sent to the Technical Sales Support and Public Relations department to ensure that there are no conflicts with other company-organized visits. As well, send a copy of this memo to the Security department.

Invention and Trade Secret Agreement

BNR regards inventions, industrial designs, technical information, and know-how conceived and developed by its employees while employed by BNR as company property. BNR protects and uses these in a manner consistent with the corporate objectives and strategies of its parent companies.

When you join BNR, you are asked to recognize this policy formally by signing the Invention and Trade Secret Agreement. This agreement gives patent rights to BNR, limits the disclosure of information, and identifies BNR as the owner of all models, instructions, drawings, notes, memoranda, and other written communication originated or acquired by you while employed by BNR.

When you leave BNR, you will be asked to sign a Certificate of Compliance, which defines your future responsibilities to the company.

BNR Information

Classified or proprietary corporate information is of great value to BNR. You have a responsibility to help safeguard BNR's scientific and commercial advantages over our competitors. Don't discuss BNR's proprietary information outside of the BNR community. Don't leave any information lying around your work area. Lock it up before you leave.

Handling Company Information

At BNR, information is classified according to its usefulness to our competitors. You should be aware of the procedures and regulations that apply to each of the following classes of information.

BNR Private
This classification is for the most sensitive information that is vital to the interests of BNR, Northern Telecom, and Bell Canada in conducting business.

Information is classified as Private when its disclosure could prevent us from achieving major objectives, could result in financial loss, could be of significant benefit to competitors, or could be detrimental to the reputation of BNR or its parent companies.

This classification is assigned by a company officer who also approves the distribution list, the control to be placed on reproduction, and the use of such documents off-premises.

Documents classified as Private must be stored in a record safe or in a steel filing cabinet equipped with a locking bar and padlock.

You cannot use electronic mail to transmit information classified BNR Private.

BNR Restricted
This category of document is for proprietary information important to BNR and its parent companies in conducting business.

Its disclosure could result in the loss of valuable trade secrets or know-how, or be detrimental to our competitive advantage in the marketplace.

This classification is assigned by a manager who also approves the distribution list and any control on reproduction or use of such documents off-premises.

Documents classified Restricted must be locked in a desk drawer or filing cabinet.

You cannot use electronic mail to transmit information classified Restricted.

BNR Proprietary
This classification is for material containing sensitive data that has significant value but is not classified as Private or Restricted.

This information may be used internally or by BNR customers and suppliers. This classification is applied to the largest volume of sensitive company information, such as memos, training materials, routine computer programs, statistics, drawings, and specifications.

This classification is assigned by the manager responsible for the information.

You must take normal security precautions when storing or transmitting these documents.

Public Domain
This category refers to information that has been approved for release or publication by the Technical Sales Support and Public Relations department.

Only information that has been assigned the Public Domain classification can be considered unclassified.

Use regular office procedures in handling such documents.



Management, Company and Employee Responsibilities

BNR takes every reasonable precaution for your protection and expects all employees to contribute to a healthy and safe workplace. While this is a team effort involving both you and your manager, each person contributes in a different way.

Managers are responsible for the following:

–providing adequate information and instruction on workplace hazards so their employees know how to minimize or eliminate these hazards

–ensuring that personal protective equipment and all safety equipment is provided, maintained, and used correctly

–involving employees in identifying and resolving health and safety issues in the workplace, through health and safety committees, the lab council, or quality circles

You, as an employee, have an important role to play as well.

–You must report workplace hazards to your manager.

–You must use or wear the protective devices or equipment provided by your manager.

–You must follow your manager's directions to minimize or eliminate hazards.

–You should not, under any circumstance, operate any equipment or device in a way that endangers yourself or your colleagues.

–You should voice your opinions, share your ideas, and participate in improving the health and safety of your workplace.

Hazards in the Workplace

There are five approaches to controlling hazards in your workplace.

1.Eliminate a hazard by redesigning the process.

2.Substitute a less hazardous material, such as by using a different chemical.

3.Use engineering controls such as exhaust fans to draw away hazardous fumes.

4.Use personal protective equipment, like safety glasses, respirators, gloves, and so on.

5.Take and implement personal safety training.

When you see a hazard in your area, advise your manager and your division safety coordinator. Your safety coordinator will review your concerns with your manager, and with specialists in industrial hygiene and safety engineering.

The safety coordinator for your division is listed in the telephone directory under Health, Safety, and Environment.

Personal Protective Equipment

You can obtain any personal protective equipment you need from the stockroom or a lab safety supply house. Your department manager is responsible for purchasing the equipment and maintaining it in good condition. You are responsible for using it appropriately and storing it as required.

Hazardous Materials

For your own protection, you must have adequate knowledge of the chemicals you're using and be aware of the proper handling procedures. An inventory of all hazardous materials and Material Safety Data Sheets (MSDS) should be available in your work area. The MSDS provides information about the chemicals in your department.

Your manager is responsible for maintaining the inventory and MSDS file, and for completing a Hazardous Materials Notification form for all new chemicals introduced into your work area.

For assistance, consult your manager or your division safety coordinator.

Emergencies

Familiarize yourself with the emergency procedures for your work area. Know your nearest exit. Ask your manager to introduce you to persons trained in first aid in your work area. Check with your manager for any special procedures, such as shutting off equipment during an emergency evacuation.

To report an emergency, telephone the emergency number or the emergency coordinator. You'll find emergency numbers in the back of the BNR telephone book, but it's wise to post them by your phone.

Don't fight a fire unless you've been trained. If there is a fire in your area, your main responsibility is to alert your colleagues, report the fire, and leave the area as quickly as possible.

Medical emergencies are handled by people trained in first aid or by the Medical department, until further help arrives.

All members of the Emergency Response Team have received training in first aid and cardiopulmonary resuscitation (CPR).

Reporting Injuries and Accidents

Report all on-the-job injuries to your manager within 24 hours. Your manager must complete a bnr-112 form and send it to the Occupational Health department, Pinecrest, in Ottawa and to the BNR Medical department. Managers are responsible for investigating and analyzing all accidents, and taking corrective action to prevent further accidents in their work areas.

You may be asked to assist in the investigation of any accident by the chairperson of your division Health and Safety committee.

Health and Safety Committees

Health and Safety committees are established at all BNR locations. The safety coordinators for each division are listed in your telephone book under Health, Safety, and Environment. These people can advise you of the next meeting and make the current minutes of your division Health and Safety committee available to you.

Medical Services

The BNR Medical department provides a broad range of medical services to employees, such as the treatment of minor illnesses and emergencies, the care of injuries that occur while you're on the job or not, and allergy injections and immunizations. As well, the Medical department will examine you following a disability absence to ensure that you are well enough to return to work.

The medical staff also offers a voluntary preventative health program to promote and maintain a high level of health and well-being. The program features an Initial Health Review and a Periodic Health Examination.

In addition to this program, you can get individual and group counseling services in such areas as stress management, physical fitness, nutrition, alcohol and drug abuse, and smoke cessation.

Your medical records are confidential and only medical staff have access to them. If you want to have the results of examinations sent to your family physician, notify the Medical department in writing.

You can use the services of the Medical department either by making an appointment, or by visiting the medical offices during regular working hours. In Toronto or Montreal, contact the local Bell Canada medical group that provides similar services for BNR employees in those locations.

BNR/NT Club

The BNR/NT Club was formed as a social, cultural and recreational organization where members could share interests beyond those of their regular employment.

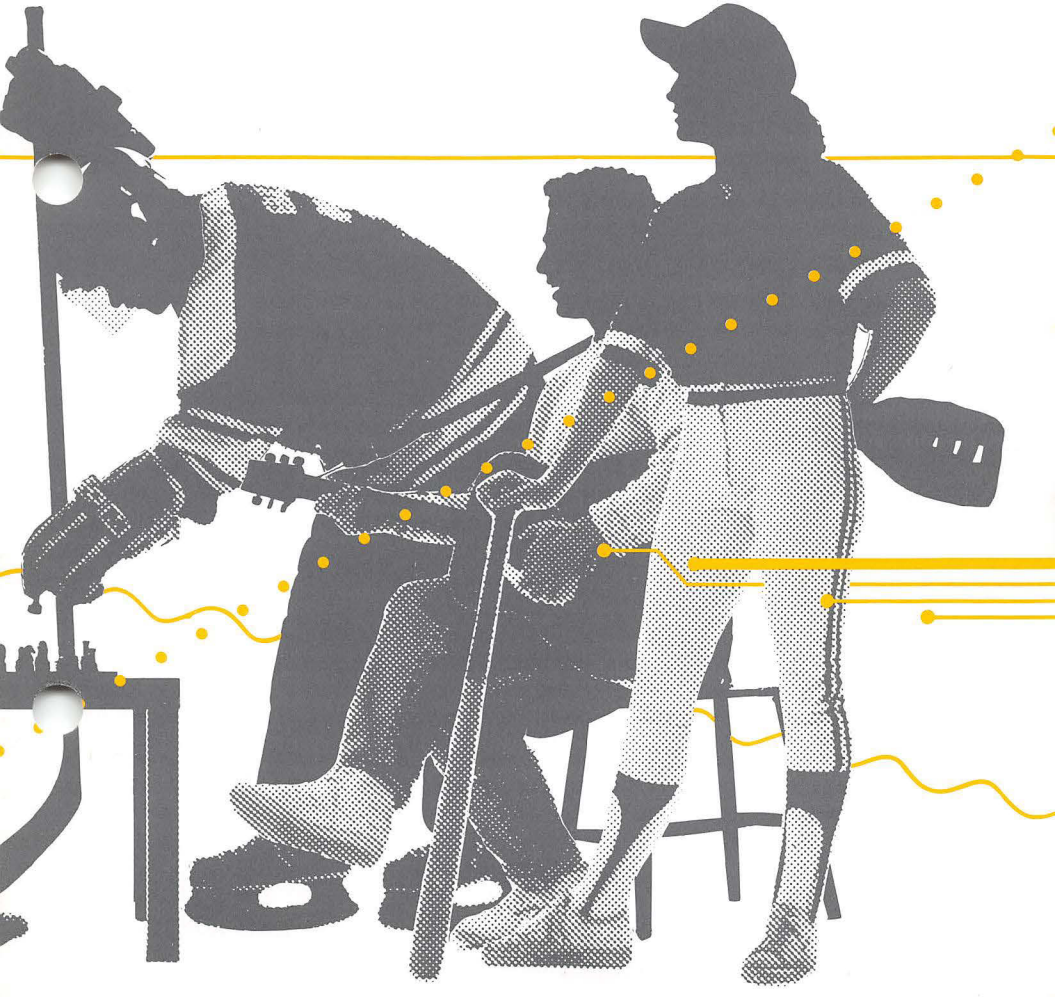


The BNR/NT Club executive is made up of one salaried coordinator and eight volunteers who hold the offices of President, Vice-President, Secretary, Treasurer, Activities Director, Social Director, Service Fund Director and Club Promotions Director. Each executive member, with the exception of the coordinator, is elected to office for a term of one year. These elections take place annually in mid-December.

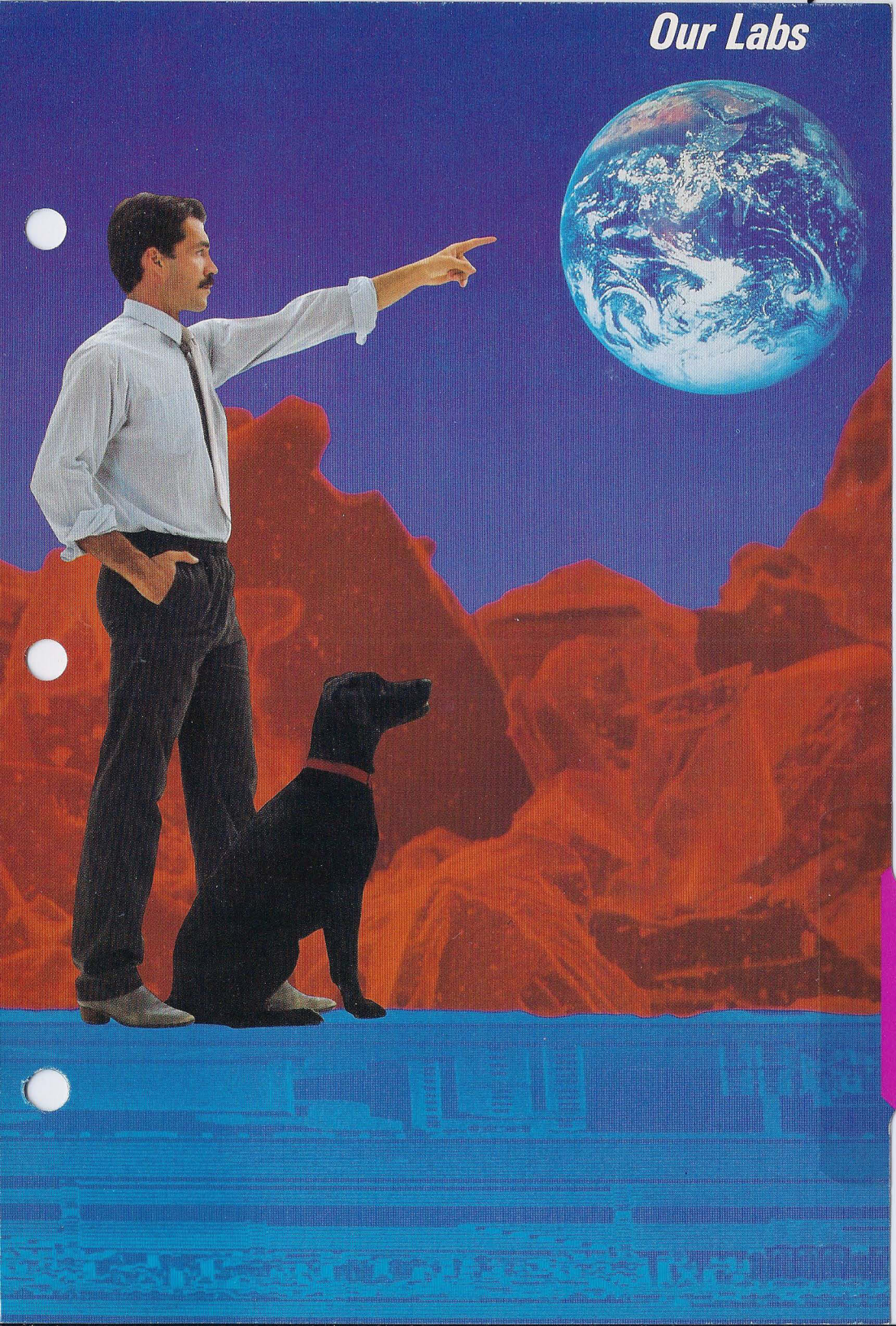
The club has more than 4000 members and sponsors 23 activity groups. Competitive teams participate in city leagues, as well as in the Northern Telecom Interdivisional Winter and Summer Games.

Social activities such as dances, parties, and day events are promoted throughout the year.

If you would like more information, call the operator and ask for BNR/NT Club Inquiries. The BNR/NT Club will be happy to send you a copy of the club's booklet and tell you how you can join.



Our Labs



Our Labs

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BNR Ann Arbor

The BNR laboratory in Ann Arbor is uniquely situated to benefit from a number of advantages. The city life is dominated by the University of Michigan, one of America's leading educational institutions. This lab is in close proximity to Detroit, a metropolitan center of business and the arts. And it is located in an advanced industrial center with many other local high tech companies, research and manufacturing plants, and divisions of major corporations.



This lab is a center for the development of integrated telecommunications technology. Ann Arbor teams are working on integrating computers with telecommunications to create sophisticated departmental business products that will allow users to communicate voice, data, text, image, and graphic information over a single system.

The Ann Arbor lab is prime in the development of integrated voice and data work stations and departmental systems that form part of Northern Telecom's Open Protocol Enhanced Networks (OPEN) World program. OPEN World provides a framework that allows users to communicate using a variety of manufacturer's terminals.

Ann Arbor works closely with Richardson, Toronto, and Ottawa to develop innovative and compatible products in network and office communications systems. This work includes research and development in such advanced areas as digital signal processing, microelectronics, behavioral research, computer science, Computer-Aided Design, and Computer-Aided Manufacture (CAD/CAM).

BNR (Ann Arbor)
100 Phoenix Drive
Ann Arbor
Michigan
48104 USA
(313) 973-4000

BNR Maidenhead

Located within the pleasant English countryside just outside London, Maidenhead is the home base for Bell-Northern Research and Northern Telecom in the United Kingdom. The Maidenhead lab is responsible for telecommunications research and development in the European environment, and is positioned to assist Northern Telecom's entry and expansion into the European telecommunications marketplace.



Maidenhead is an excellent locale for sports and recreation facilities, and is rapidly becoming a key center for high tech industries. The town is noted for its great pubs and restaurants, and the area is well known for its natural beauty.

This lab develops international versions of Northern Telecom's circuit and packet switches, including digital packet switching systems, digital private branch exchanges, and the DMS-100 central office switching system.

The Maidenhead lab works not only with Northern Telecom, but also with British Telecom, Mercury Communications, and other customers. It helps position the company closer to European markets, providing keener insight into the expectations of customers, and ensuring opportunities to create innovative designs.

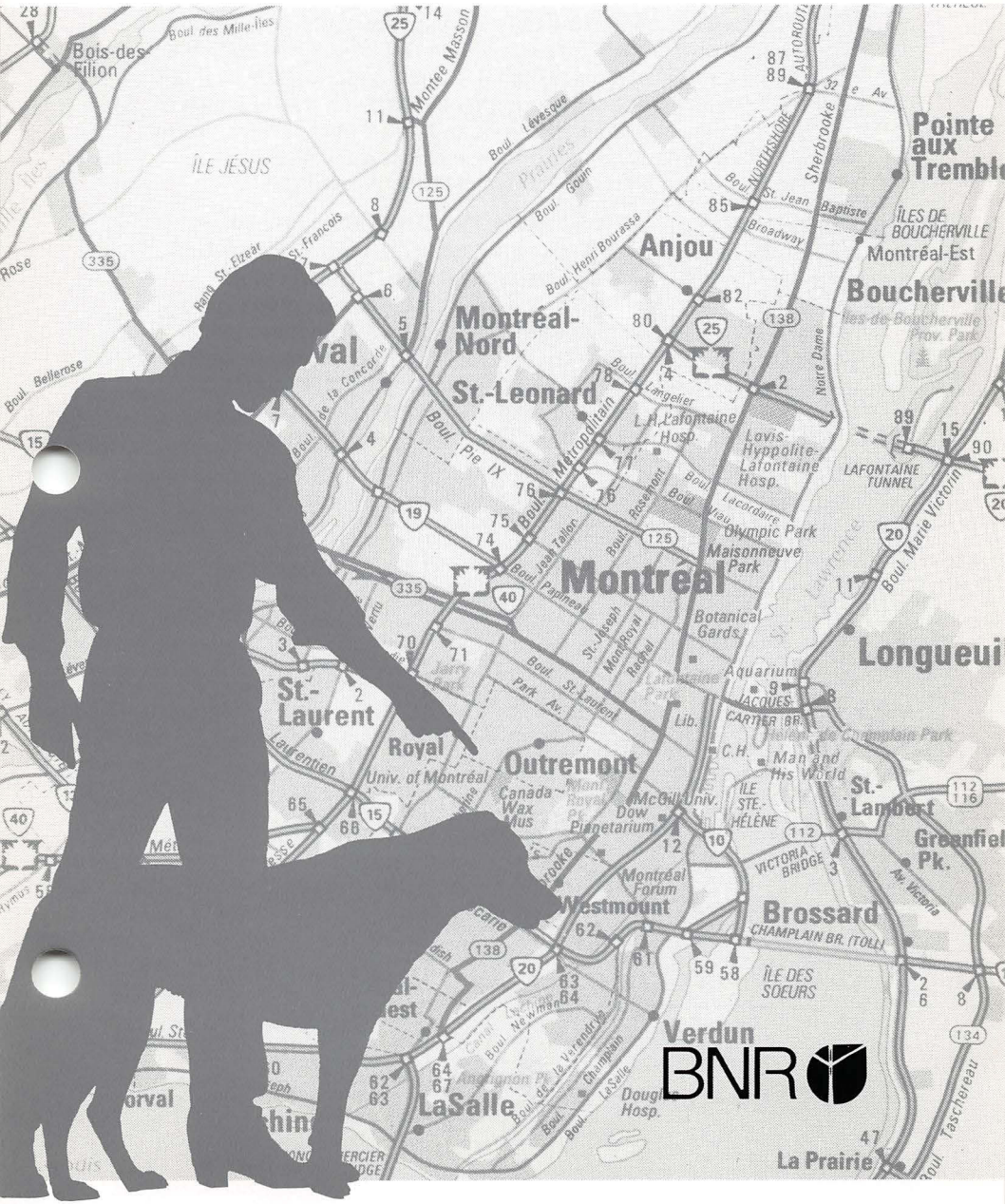
The Maidenhead facilities are supported by a captive digital telephone exchange (DMS-100), electronic mail services, and a large IBM mainframe computer with direct links to computing resources at BNR's North American labs. The laboratory team provides expertise in systems software, call processing, maintenance systems, packet and circuit switching products, telephony, distributed processing, and real-time systems.

BNR Maidenhead funds research at the University of Glasgow, supports the development of talented students at the university level, and has employed a number of new graduates in its almost three years of operations.

BNR (Maidenhead)
St. Mary's House
17 St. Mary's Walk
Maidenhead, Berkshire
England
SL6 1QX
(44) 628-7921

BNR Montreal (Nuns' Island)

The focal point for telecommunications research and network operations in the province of Quebec is the BNR Montreal laboratory. This lab is located on Nuns' Island in the city of Verdun, Quebec, in the greater Montreal area. Montreal is a large, cosmopolitan city, with a uniquely French flavor, and offers a great variety of attractions.



This lab is responsible mainly for network operations, network planning, image and speech processing. The Network Operations department works on the evolution of all aspects of telecommunications network operations. The Network Planning group is involved in the development of the network planning tools that are essential in allowing efficient provisioning of networks to meet demand, and in assessing the viability of new networking concepts and technology.

BNR Montreal has earned an international reputation for its work in digital signal processing. The scientific staff work on encoding and transmitting image signals in digital format, a technology that will eventually allow new, more economical image-related services to be offered to the customer. As well, our researchers study natural speech characteristics and work on improving the quality of messages that are reproduced artificially by computer.

The Montreal lab is the location for INRS Telecommunications, a cooperative research and post-graduate education program run jointly by the University of Quebec and BNR. It covers major aspects of network planning and speech and image processing. The personnel, students, and trainees at INRS Telecommunications share office space with BNR. Both organizations exchange personnel on a regular basis. This coexistence helps students become more aware of the industry's needs, and encourages them to focus their research in those fields which show the most promise for the future.

BNR (Montreal)
3 Place du Commerce
Verdun
Quebec
H3E 1H6
(514) 765-8888

Located in Silicon Valley close to San Francisco and other West Coast centers of entertainment, sports and business, BNR Mountain View was first established in Palo Alto in 1975 and moved to its present quarters in Mountain View in 1980.

The location in Silicon Valley helps keep the lab in touch with the rapidly evolving technologies and applications in such areas as local area networks and personal computers. The lab has ongoing research contacts with leading educational institutions such as Stanford University, and participates in cooperative education programs.



The Mountain View lab is involved in integrated office communications; that is, in developing integrated voice and data office communications products and networks. Engineers concentrate primarily on the integration of voice, data and image features in new products, on local area networks, and on information management systems. Networks technology staff conduct future product studies and specify new systems architectures, functions, features, and technologies.

Mountain View personnel also plan corporate information networks and conduct office automation studies for a variety of external clients.

This lab has a major responsibility for the ongoing evolution and enhancement of the SL-1 family and digital business communications systems. Since its introduction in 1975, the SL-1 has continually evolved new software features and data capabilities to become the world's largest selling fully-digital PBX system.

The lab plays a key role in Northern Telecom's $1.2 billion Open Protocol Enhanced Networks (OPEN) World research and development program. It is in the forefront of product development for integrated voice, data, and image communications. An enhanced array of products and services, including desk-to-desk conferencing, multimedia conferencing, and digital terminals are being developed here.

Mountain View engineers are also involved in developing system capability to use existing office telephone wiring to carry data at speeds in excess of one megabit per second (one million bits per second).

BNR (Mountain View)
685A East Middlefield Road
Mountain View
California
94043 USA
(415) 969-9170

BNR Ottawa

BNR has its headquarters on the outskirts of Canada's capital, Ottawa, in an area frequently referred to as Silicon Valley North. Nestled in a locale rich in history, culture, and natural beauty, BNR Ottawa focuses its planning, research, and development efforts on two major areas: network products and communicating office products.



Networks technology planners anticipate and identify how technology can change a network and the products that it encompasses. Engineers in the digital switching system development division design the basic system architecture as well as the software and hardware associated with the Digital Multiplex System (DMS) family of switches and the SL-10 data network packet switches. Engineers in the transmission products division design and develop products that link the networks.

Exploratory researchers in Ottawa are involved in the development of semiconductor laser, gallium arsenide, surface acoustic wave and optical memory devices. Computer science specialists develop the software and Computer-Aided Design/Manufacture (CAD/CAM) system that is used to shorten the design cycle.

Planners in the access and services division coordinate the development of integrated voice and data terminals and cluster systems, enhanced applications software, key systems, and telephone terminals. Industrial design specialists conduct behavioral research to ensure that BNR product designs are congenial and aesthetically pleasing.

BNR Ottawa's computing technology group directs the development and management of computer resources throughout the company. In addition, an office applications project group coordinates electronic office system trials that provide valuable information about the customer's use of advanced systems.

Design Support groups in Ottawa work with design teams to guarantee high quality in the designs developed by BNR for Northern Telecom. They have the facilities to produce prototypes and systems for testing to ensure that products will be reliable, maintainable, and manufacturable.

Designers and specialists in microelectronics and semiconductor technology function as working members of every design team, offering their expertise in the design and packaging of custom integrated circuits.

BNR (Ottawa)
P.O. Box 3511
Station C
Ottawa
Ontario
K1Y 4H7
(613) 726-2211

BNR Research Triangle Park (RTP) 11

BNR Research Triangle Park is situated in the largest planned industrial park in the United States, roughly equidistant from three major universities: North Carolina State University in Raleigh, the state capital; the University of North Carolina at Chapel Hill; and Duke University at Durham. BNR RTP is located near Northern Telecom's Integrated Network Systems Group headquartered at Research Triangle Park.



This lab performs major research and development tasks for the DMS-100 family of digital switching systems. The DMS-100 is a large computer-controlled digital switching system serving up to 100,000 telephone lines. These systems are sold to telephone operating companies across the United States to handle local and long distance calls.

The primary role of this lab is software and hardware design. Hardware designers perfect digital logic and microprocessor systems for these telecommunications switching systems. At the same time, software designers, using high-level computer languages, create real-time systems that operate the equipment.

RTP scientists also work on networks technology in an effort to evolve and enhance the company's product lines. Network planners and systems engineers study today's network designs to anticipate the needs of the future.

Supporting all this development are programmers, engineers, and technical writers, who work on software tools, operating systems, data communications, design quality, and technical documentation. RTP has excellent facilities that include a DMS-100 digital central office switching system, extensive computer systems, and an information resource center that enables BNR to perform research more productively and efficiently.

BNR (RTP)
P.O. Box 13478
Research Triangle Park
North Carolina
27709 USA
(919) 481-7000

In the heart of Texas, just northeast of Dallas, is the BNR Richardson laboratory. This lab benefits from its close association with Dallas, a dynamic city and major center for business, banking, resources, and the arts.



BNR Richardson is developing strong links to such universities as the University of Texas; Texas A & M University at College Station, Texas; Southern Methodist University; Jackson State University in Louisiana; and Tulane University in New Orleans. The lab supports university research in computer science and participates in cooperative education programs.

The environment at BNR Richardson is exciting and rewarding because the research and development is product and application-oriented. The lab's principal efforts are in the development of advanced telecommunications systems for the specialized common carrier and the private telecommunications market.

Richardson is responsible for the successful development of the DMS-250 digital switch and the MTX cellular mobile radio system. It also has responsibility for the ongoing development of the SL-100, a large office PBX, and for military versions of the DMS-100 switching system.

One of the strengths of the Richardson lab is the management of large software projects. Software that Richardson scientists developed for the DMS-250 provides the customer with advanced operational and maintenance features.

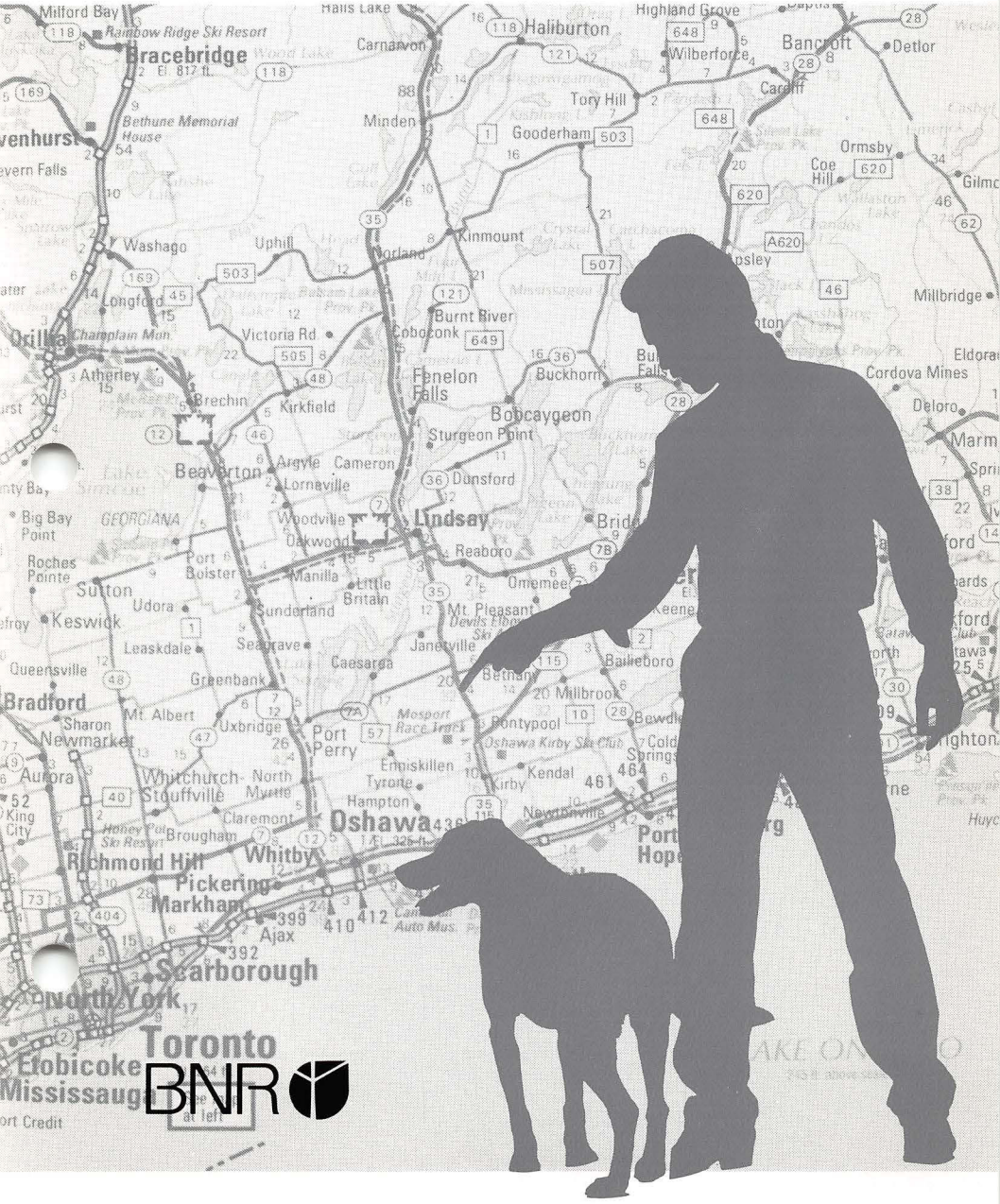
This lab has been the prime developer of cellular mobile radio for Northern Telecom. Cellular technology is creating a revolution in the communications field. Developing the cell site controller, digital switch, and associated software for these systems is a challenging, ongoing assignment for this lab.

Richardson is also working on programs in such areas as equal access, network signaling, and value-added services for the specialized common carrier telecommunications markets.

BNR (Richardson)
1150 East Arapaho Drive
Richardson
Texas
75081 USA
(214) 997-4500

BNR Toronto

The heart of downtown Toronto is the location for this major center for the development of software for the electronic office–the BNR Toronto laboratory. This lab is situated down the street from the legislative buildings of Ontario, near the University of Toronto, and adjacent to Bay Street, the business center of the country.



This lab is responsible for developing information services as part of Northern Telecom's $1.2 billion Open Protocol Enhanced Networks (OPEN) World program. These services will provide an integrated set of multimedia capabilities that gives users enhanced personal communications and easier access to information.

Meridian SL Information Services developed by BNR Toronto provides enhanced tools for information access and communications such as, tools for telephony, voice messaging, electronic mail, and integrated text and voice messages.

In addition to information services, the Toronto lab has developed other software systems like the Automatic Call Distribution (ACD-D) system. The ACD-D system is used on the Meridian SL-1 Integrated Services Network to distribute incoming calls. The system provides rapid response to customer enquiries. ACD-D customers include airlines, travel agencies, hotels, banks, government offices, and the emergency 911 network.

Toronto researchers are directly involved with product development as engineers, computer scientists, technologists, and technical managers. They work closely with colleagues at other BNR labs such as Ottawa, Mountain View, and Ann Arbor.

The Toronto lab has close ties to local universities. In any four-month term there are as many as 25 university students working as full members of development teams.

BNR (Toronto)
522 University Avenue
11th Floor
Toronto
Ontario
M5G 1W7
(416) 598-0196

Frequent Business Activities



Frequent Business Activities

Authorizations	**1**
Activities	1
– Automobile Use	1
– Capital Asset	1
– Cash Advance and Reimbursement	1
– Clerical Support	2
– Computer User ID	2
– Corporate Conference Rooms	2
– Direct Deposit of Paycheck	2
– Education/Training Request	2
– Moving Equipment/Maintaining Facilities	2
– Ordering Goods and Services	2
– Overtime pay	2
– Proprietary Information	3
– Removing BNR property	3
– Shipping Goods	3
– Stockroom	3
– Submitting Patents	3
– Timesheets: Reporting Hours Worked	3
– Travel and Reimbursements	3
– Visitors	4

Authorizations

BNR requires that you have the proper authorization for every business transaction that uses resources such as labor, capital or materials.

Authorization levels range from 1 (one) representing the president of BNR to 7 (seven) for first level managers. Some transactions will require only one level of authorization; others require several. You can get details on the required authorization levels for various transactions from your manager, or refer to the appropriate sections in the Corporate Policies and Procedures.

Whenever you issue a document or request a service, make sure you have the proper authorization.

The jobaid that follows provides details on initiating some of the more common business activities with which you'll be involved. Your manager is responsible for ensuring that forms are properly authorized.

If you are going to	Then
Use your own automobile on company business	1.Consult your manager for the details on the terms and conditions. 2.Fill in bnr-122, Authorization for the Use of Employee-Owned Vehicle 3.Submit it for your manager's signature.
Be reimbursed for using your own car	1.Claim the expenses on bnr-94, Employee Expense Voucher. 2.Submit it for your manager's signature
Transfer or dispose of a capital asset	1.Fill in bnr-111, Transfer or Disposal of Assets/Material. 2.Submit it to your manager for proper authorization.
Get a cash advance (e.g. for a business trip)	1.Fill in bnr-70, Cash Advance. 2.Submit it for your manager's signature
Have the funds you spent authorized or be reimbursed for out-of-pocket expenses incurred on BNR business	1.Fill in bnr-94, Employee Expense Voucher. 2.Attach all original receipts. 3.Submit it for your manager's signature.

If you are going to	Then
Request temporary clerical or secretarial staff	1.Send your request in writing using bnr-717, Clerical Support Requisition or telephone the Clerical Support group. 2.Give at least one week's notice if possible.
Get your computer userID	1.Fill in bnr-678, UserID Request Form. 2.Submit it for your manager's signature.
Book any corporate conference room	Call the number for the appropriate location listed under Corporate Conference Room in the BNR telephone directory.
Have your paycheck deposited directly into your account at any accredited financial institution	1.Fill in bnr-610, Direct Deposit. 2.Send it to the Payroll dept.
Sign up for a BNR education or training course	1.Fill in bnr-108, Educational Updating Request. 2.Submit it for your manager's signature.
Request a refund of tuition for courses you're taking	1.Fill in bnr-31, Tuition Refund. 2.Submit it for your manager's signature.
Have office or lab furniture and equipment moved, or items related to building and facilities, such as air conditioning or electrical outlets installed, adjusted, or modified	1.Contact your Facilities Services dept. 2.Fill in bnr-104, Work Order. 3.Submit it for your manager's signature.
Order goods and services	1.Fill in bnr-66, Purchase Requisition. 2.Submit it for your manager's signature. 3.Send it to the Purchasing dept.
Claim pay for overtime worked	1. Fill in bnr-326, Biweekly Overtime and Unpaid Absence Report. 2.Submit it for your manager's signature.

If you are going to	Then
Reveal BNR proprietary information or receive proprietary information from a third party	1.Contact the legal department or the Third Party Contracts department BEFORE such activity takes place. 2.Obtain the appropriate approval and authorization. 3.Complete a non-disclosure agreement.
Take BNR property off BNR premises	1.Fill in bnr-97, Personal Removal of Lab Property From the Premises–Package Pass. 2.Submit it for your manager's signature. 3.Hand the authorized form to security desk personnel as you leave.
Ship goods by commercial carrier	1.Fill in bnr-66, Purchase Requisition. 2.Submit it for your manager's signature. 3.Send it with the goods to the Shipping dept.
Get frequently used items for office, business facilities, or components (e.g. stationery, writing materials, batteries, etc)	1.Check with the stockroom. 2.Fill in bnr-218, Office Supplies and Stationery Equipment
Submit a patentable idea or invention	1.Fill in bnr-36, Disclosure of Invention. 2.Submit it for your manager's signature
Report the hours you worked on company business	1.Fill in the monthly timesheet or timecard—bnr-401, bnr-402 or bnr-403—depending on your location. 2.Submit it for your manager's signature. 3.Forward it to your Payroll dept.
Travel on company business	1. Contact the designated BNR travel agent at your location. 2.Draw a cash advance by filling in bnr-70, Requisition and Receipt for cash. 3.Submit them for your manager's signature.

If you are going to	Then
Account for your expenditures	1.Keep receipts for all expenses incurred while traveling on company business. 2.Fill in bnr-94, Employee Expense Report. 3.Submit the form with receipts attached for your manager's signature.
Bring visitors onto BNR premises	1.Have your visitors sign in on the daily register at the security desk in your building. 2.Make sure your visitors are accompanied at all times.
Have your children visit you at work	1.Sign the children in on the daily register at the security desk in your building. 2.Fill in and sign the Waiver of Responsibility at the security desk. 3.Make sure you accompany your children all the time they're on BNR premises.

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Thank You

To put together an information book such as this one requires the support and effort of many people. I'd like to take this opportunity to thank all the people who gave me information and devoted time to reviewing the book.

There are those who deserve particular mention for their involvement. At the top of the list are Vicky Shackleton who added the job of coordinating communications between me and BNR personnel to her already busy schedule, and Tom Hennebury and Dan Mothersill for setting me on the right track when I first took on this assignment.

All the HR staff and the DMS people (Marc Hornbeek, Glen Russell, Harold Graham, Oliver Chan, Claude Champagne and Brian O'Higgins) deserve special thanks for the quality of their input and the speed with which it was made available. I am grateful, as well, to the following people for their effort: Grant Birks, John Mlacak, Don Silverthorn, Dave Goddard, Steve Malcolm, David Dunn, John Philips, Marg Nix, Jamie Laidlaw, Maureen Towaij, Tina Lohoar, Joanne Syrett, and Chris Dorey.

I must also acknowledge the support of Andy Sutcliffe who made it possible for me to benefit from the expertise of Cynthia Bradley and Paul Yee. Cynthia performed an exhaustive edit on the first draft that improved the style and readability of the book. Paul provided tips on human factors that were incorporated into the overall design of the guide to make it more attractive and usable for the reader.

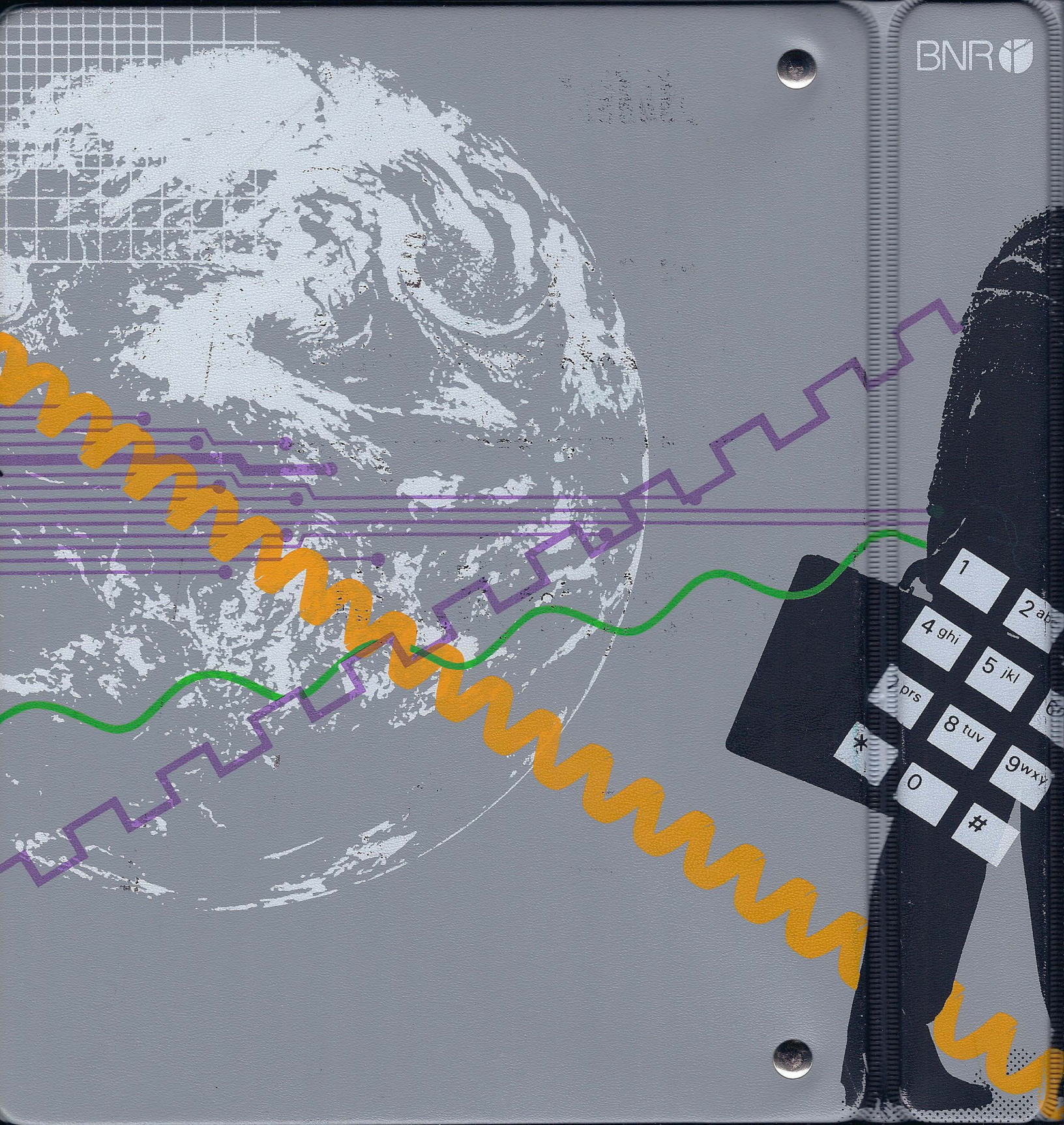
All of us who will read and enjoy the book owe a debt of gratitude to art director, Frank Haveman, for the exuberant use of color and attractive photos that make BNR come alive within these pages.

If I have unwittingly left anyone out, please accept my apologies with the knowledge that I couldn't have done this without you.

Sylvia Laale

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